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STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

For forty-eight years—IRON TRADE REVIEW

NOV 8 - 1932

THE CORRIGAN, McKINNEY STEEL CO.

• CLEVELAND •

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MERCHANT BARS · SPECIAL SHAPES

COKE OVEN BY-PRODUCTS

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THE N.&G. TAYLOR COMPANY

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TIN PLATE

Cokes and Charcoals • Large Tinned Sheets

TERNE PLATE

For Roofing and Manufacturing Purposes •

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"Here's another thing I like about this new *'Shield-Arc'* welder—its controls are right up handy where you can reach them easily. Putting them anywhere else would be like placing the telephone on the floor.

"When a fellow wants to weld he wants to do nothing else but, except to make it snappy . . . so the easier you make it for him to start his welder, adjust the welding heat and set his polarity, the better he'll like it, and the more welding he'll do."

"You forgot to mention that the *'Shield-Arc's'* 'handy height' controls are all enclosed in a safety control cabinet with no live contacts exposed.

"Also being placed at handy height, there's no chance of bumping the controls when moving the welder.

"And it's so easy to get at the control mechanism. All you have to do is open the hinged cover on the back of the safety control cabinet. There's the control mechanism at arm level for easy working, and a complete wiring diagram stares you in the face, for guidance.

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1. More weld metal deposit per K. W. H.
2. Faster welding per K. W. H.
3. Lower cost per unit of welding—the unit being per lineal foot of weld, or per pound of weld metal, or per hour of welding."

LINCOLN

THE LINCOLN ELECTRIC COMPANY, CLEVELAND, OHIO

Largest Manufacturers of Arc Welding Equipment in the World

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Yes, we specialize *in fine high carbon steel* such as THIS

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Because of its proved ability to consistently turn out a material possessing exactly the qualities required, Roebling has received orders for substantial quantities.

If you are a user of fine high carbon flat wire, tempered or untempered, it would pay you to investigate: (1) the very high quality and uniformity obtained by Roebling through making its steel in *small* open-hearth furnaces; (2) the results achieved by Roebling's specialized experience in rolling and heat treating difficult "flats"; (3) the care and attention to detail that Roebling's specialized organization permits.

We invite your inquiry regarding Roebling high or low carbon steel "flats".

JOHN A. ROEBLING'S SONS CO., TRENTON, N.J.

New York, Boston, Chicago, Philadelphia, Atlanta, Cleveland, Seattle
San Francisco, Los Angeles, Portland *Export Dept., New York*

ROEBLING FLAT WIRE

Volume 91 Number 19

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

NO MATTER what the outcome of the election, people will ride, the automobile industry is convinced. And it is equally certain that this riding will be done principally in low-price cars, for smashing campaigns in this field are maturing. First to show its new line for 1933 is Plymouth (p. 16), now a six, with body and hood streamlined, front axle tubular, price reduced $60. Chevrolet, probably with a dual line, after starting on 60,000 units for November and December has scheduled 50,000 for January. Ford, who has never failed to meet a price situation, appears to be broadening his line. Continental is closing on parts for a car to undersell everyone. November, accordingly, gives every indication of recording the first increase in automobile production since May, with a December gain also probable.

Steel Rate Is Back to Early June Level

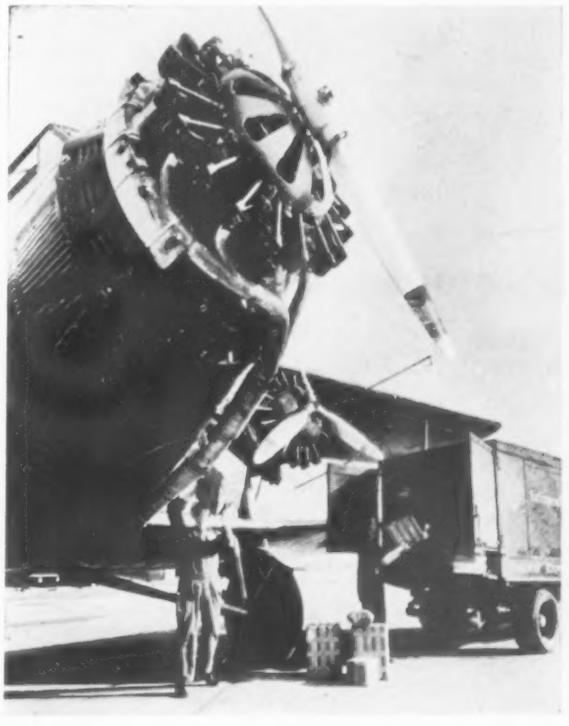
This improved automotive situation, coupled with a bunching of miscellaneous orders, has put the steelmaking rate up to 21 per cent (p. 54), fastest gait for the mills since June. This week a 22 per cent rate may be attained. . . . Actual bookings, however, have eased off since Nov. 1, with the election blamed (p. 45), and producers are assaying prospects for the remainder of the year. . . . October continued the betterment in pig iron production which September inaugurated, and since the low point of August there has been a net gain of nine in active blast furnace stacks and an expansion of 22 per cent in daily production (p. 11). . . . In the pig iron markets (p. 57), shipments continue to overshadow bookings.

Bridges Lead in R. F. C. Allotments

Probably immune to any election results are Reconstruction Finance Corp. projects, which appear more promising from the standpoint of support of the markets. Largest of government-financed outlets for steel is the San Francisco-Oakland bridge, requiring upward of 200,000 tons, on which bids will be called about Nov. 15 (p. 63). Award now is being made of the remaining 28,000 tons for the Golden Gate bridge. . . . For a bridge across the Hudson river at Catskill, N. Y., taking over 12,000 tons (p. 50), an R. F. C. appropriation has been approved. . . . Fresh R. F. C. loans to four cities (p. 13) call for 3325 tons of cast iron pipe and several large steel tanks. . . . The final block to a New York Central program for repairing 13,000 freight cars has been cleared (p. 49) by R. F. C. funds.

Plate Needs Cannot Await 5-Year Plan

Abroad, the iron and steel markets display greater vitality and London cables (p. 63) that the outlook in general is improving. Russia has placed 25,000 tons of plates with Eng-



Steel Hornet engines developing 525 horsepower and driving finely balanced steel propellers power this 14 passenger plane used in coast-to-coast service by the United Air Lines

lish and 15,000 tons with German mills. In the export markets, a hardening of prices is evident. . . . A further impediment to foreign trade is a revision upward of the Australian tariff (p. 14). The various dumping and tariff complaints at Washington, however, have made no progress in the past week.

Mile-Long Freight Trains Go to Sea

Shipyards, plate mills and crane manufacturers have co-operated in the construction of two ocean-going ships, aptly termed seatrains, which are causing an upset in transportation (p. 23). A mammoth crane puts loaded freight cars aboard these vessels, which on four decks have track capacity for 100 cars, equal to a freight train one mile long. Seatrain service between New Orleans and Havana aroused no protest, but making the service triangular to New York has. . . . This new type of freighter, it is claimed, is a very real threat to the orthodox kind, of which the shipping board is disposing 124 (p. 13). For scrapping these wartime ships a Baltimore company will pay $1.51 per gross ton of recoverable material.

New Light Cast on Ternary Deoxidizing Alloys

Various triple alloys of manganese, silicon and aluminum and of manganese, silicon and zirconium are being used (p. 31) in the deoxidation of steel to improve present practice, according to a speaker before the metallurgical advisory board of the Carnegie Institute of Technology. . . . This convergence of opinion in deoxidizing steel contrasts with varying viewpoints on the construction of open-hearth furnace bottoms for making steel (p. 37). Bottom supporting structures are of similar type, but the loading of these structures falls into three classes. . . . Addition of spiegeleisen when open-hearth furnace heats are ored (p. 39) is claimed helpful in eliminating impurities.

Mills Bet New Equipment on Recovery

An earnest of steel producers' confidence in a broad future market is their willingness to improve their plant. Of a special type of mill—the Steckel—two installations are now being made (p. 12) and a third is being put in operation. . . . A comparable manifestation of faith and forward step is the application of automatic temperature control to electric rivet and rod heaters through adaption of the electric eye, or photoelectric cell (p. 26). Temperature can be held within 10 degrees, and burning prevented. . . . The photoelectric cell has also won its spurs in the control (p. 39) of a repeater at a hot strip mill . . . . Induction motors for mechanical feeder and catcher tables at sheet and tin mills reverse (p. 39) as often as 40 times a minute, and stay cool.

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

Dumping Fabricated Steel at Home

To the Editor:

While the leading hot steel producers are chattering about protection from dumping of foreign steel it might be well for them to practice a little of the spirit of the "Golden Rule" and to stop dumping the fabrication and erection of structural steel work at prices that cannot possibly pay the costs. The leading steel interests are doing this in competition with fabricators and erectors who are or would like to be their customers.

The American Iron and Steel institute could well busy itself with this phase of the problem set a good example at home before it goes into the situation abroad.

ONE OF THE VICTIMS

Illinois

Problem of Practice, Not Theory

To the Editor:

You do well to draw a line of distinction between dumping of foreign steel and the question of a general tariff policy, as you did in the last issue of STEEL. Dumping constitutes a menace that faces us today. We cannot afford to let it become tangled up with the intricate details of general tariff revision, which is a big problem in itself. Here on the Atlantic seaboard, the influx of foreign steel concerns us in terms of dollars and cents. To us it is a practical problem and not a question of theory.

New York. R. C. H.

Hours of Work and Unemployment

To the Editor:

Assuming roughly 8,000,000 persons out of work and 4,000,000 on 50 per cent part time, is it not fair to assume that 50 per cent of these are married with one child, making a total of 10,000,000 dependents who also must be supported by charity, etc.?

Can a person be supported on less than 10c per day for food, 10c for housing and 5c for clothing, fuel, medicine, etc., at a total of 25c per day, which must be supplied in some manner, which makes the person a liability to the community to that extent?

Is not every one employed paid at least 10 per cent less than the value of what he produces or tends to produce?

Is not the average compensation of those now employed, including wages and salaries, at least 25c per hour?

If these assumptions are correct, which would be most profitable to the country as a whole?

30,000,000 persons employed 8 hrs. @ 25c $60,000,000 per day
less 20,000,000 supported @ 25c per day.... 5,000,000 per day

Balance on which increased wealth would be figured at 10 per cent $55,000,000
Increased wealth ..... 5,500,000 per day

or—

40,000,000 persons employed @ 6 hrs. @ 25c ..... $60,000,000 per day
Increased wealth ..... 6,000,000 per day

Apparently if the reasoning is correct, the United States is richer by $500,000 per day or say $125,000,000 per year, if all were employed 6 hours, rather than 75 per cent cent at 8 hours leaving 25 per cent as economic liabilities.

E. L. M.

Pennsylvania

Pig Iron Production Recoups Losses of Summer Months

NINE blast furnaces have resumed activity during the past two months—five in September and four in October—and since Sept. 1 the daily average rate of coke pig iron production has increased 22.1 per cent.

Incidentally, since April, 1931, only three months have shown increases in average daily production and this is the first time a gain has been registered in two consecutive months. Operating stacks and average daily rate have now been restored to the levels which preceded the summer slump.

Active furnaces totaled 50 on the last day of October, a figure which was the highest since the last day of May when 54 were making iron. Forty-six were operating on Sept. 30 and only 41 on Aug. 31, the low point for all time.

Average daily production of pig iron in October was 20,795 gross tons, a rate which practically matched the 20,867-ton output in June. As compared with the 19,788-ton daily rate of September, the October rate was an increase of 5.06 per cent. The September output had shown a 16.2 per cent gain over August's all-time low point of 17,035 tons. In two months, the daily rate has recovered 3760 tons. Iron was made at the rate of 37,831 tons per day in October, 1931.

AVERAGE DAILY PIG IRON PRODUCTION

	1932	1931	1930	1929
Jan.	31,336	55,337	91,573	110,742
Feb.	33,122	61,114	101,640	114,942
Mar.	31,194	65,448	104,930	119,622
Apr.	28,524	66,986	106,371	122,106
May	25,282	64,355	104,564	125,753
June	20,867	54,599	97,817	123,837
July	18,394	47,170	85,110	122,016
Aug.	17,035	41,264	81,455	120,845
Sept.	19,788	38,947	75,893	116,548
Oct.	20,795	37,831	69,851	115,747
Nov.	.....	36,727	62,182	106,081
Dec.	.....	31,625	53,732	91,513
Av.	24,594	50,035	86,141	115,808

Total production for October was 644,648 tons, this being an increase of 51,008 gross tons, or 8.6 per cent, over the 593,640 tons of September. October was a one-day longer month than September. In October, one year ago, the production was 1,172,781 tons. For the 10-month period ended in October, iron output aggregated 7,501,135 tons, a drop of 8,679, 679 tons from the figure of 16,180,614 tons in the corresponding period of 1931.

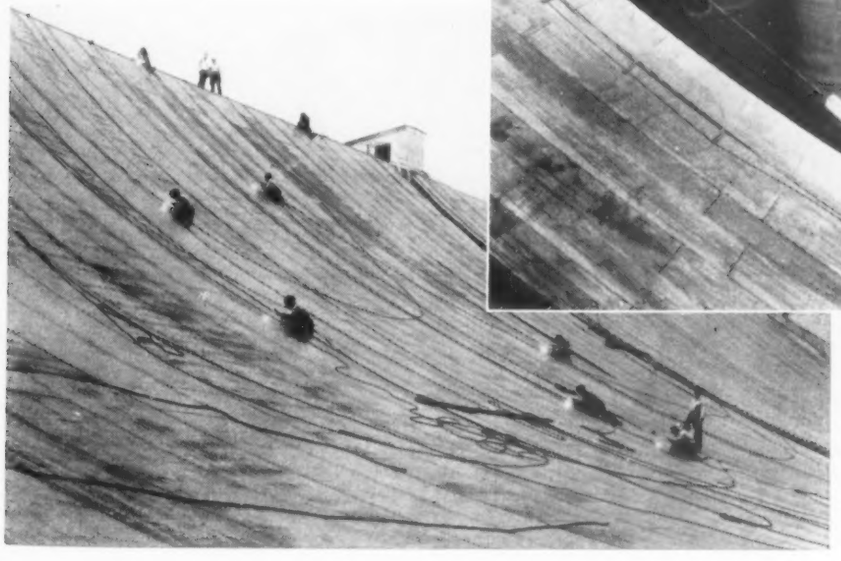
Relating production to capacity, the operating rate for October was 14.7 per cent, against 14.0 per cent in September and 12.0 per cent in August. October, one year ago, showed a rate of 26.3 per cent.

During October, five furnaces were blown in and one was banked. Nonmerchant or steelworks stacks gained three and merchant stacks gained two and lost one.

Furnaces blown in during October were: In Ohio: Portsmouth, Wheeling Steel Corp.; Ohio No. 2, Carnegie Steel Co. In New York: Donner No. 1, Republic Steel Corp. In Alabama: Pioneer No. 2, Republic Steel Corp.; one City, Sloss-

Arc Welded Steel Sheets Form Catenary Roof for Elevator

FOUR catenary steel roofs, each 140 x 288 feet, arc welded of 12-gage mild steel sheets, involving 60,000 lineal feet of welds, were erected recently on elevators built by Port of New York Authority for the port of Albany, N. Y. Five sheets were welded in a jig on the ground, a yoke of half-inch steel bolted to one end and the section then hoisted to position and bolted to the tops of the walls, forming an angle between 30 and 40 degrees. There are no supports between the walls. Alternate strips were first placed and the remaining sections afterward. Welders completed the job by tack welds and then continuous welds by the step-back method to dissipate heat. All welding was by the shielded arc process, using electrodes and equipment manufactured by the Lincoln Electric Co., Cleveland, done by the J. K. Welding Co., New York.



Sheffield Steel & Iron Co. The only furnace removed from operation was the Shenango No. 3 stack of the Shenango Furnace Co. in Pennsylvania.

With the demolition of the Soho furnace of the Jones & Laughlin Steel Corp. in Pittsburgh (STEEL, Oct. 17, page 14) and the sale of the two Mayville, Wis., furnaces of the Youngstown Sheet & Tube Co. for dismantling (STEEL, Oct. 24, page 12) the number of potential blast furnaces in the United States has been reduced from 295 to 292.

RATE OF BLAST FURNACE OPERATION

(Relation of Production to Capacity)

	1932[1]	1931[2]	1930[3]	1929[4]
January	22.1	38.4	65.0	79.0
February	23.4	42.5	72.1	82.2
March	22.0	45.4	74.5	85.5
April	20.2	46.5	75.4	87.4
May	17.9	44.7	74.2	89.8
June	14.7	37.9	69.3	88.5
July	13.0	32.7	60.3	87.2
August	12.0	28.7	57.8	86.4
September	14.0	27.0	53.8	83.3
October	14.7	26.3	49.6	82.6
November	.....	25.5	44.1	75.8
December	.....	22.0	38.1	65.5

[1]Based on capacity of 51,598,175 gross tons Dec. 31, 1931; [2]on capacity of 52,515,875 tons; [3]on capacity of 51,490,680 tons; [4]on capacity of 51,069,895 tons. Capacities by American Iron and Steel institute.

MONTHLY PIG IRON PRODUCTION

	1932	1931	1930
Jan.	971,437	1,715,443	2,838,751
Feb.	960,550	1,711,192	2,845,937
Mar.	967,015	2,028,906	3,252,822
April	855,734	2,009,582	3,191,119
May	783,769	1,995,001	3,241,477
June	626,015	1,637,998	2,934,508
July	570,222	1,462,270	2,638,441
Aug.	528,105	1,279,205	2,525,105
Sept.	593,640	1,168,436	2,276,781
Oct.	644,648	1,172,781	2,165,374
10 mos.	7,501,135	16,180,814	27,910,315
Nov.	.....	1,101,820	1,865,458
Dec.	.....	980,377	1,665,715
Total	.....	18,263,011	31,441,488

Tin Plate Makers Buy Steckel-Type Mills

Follansbee Brothers Co., Pittsburgh, which recently was licensed by the Cold Metal Process Co., Youngstown, O., to operate 1 hot and 10 cold mills of the Steckel type, will install immediately at its Follansbee, W. Va., plant one 38-inch Steckel cold mill for rolling black plate for tinning.

Raw material in the form of wide strip will be purchased from a nearby maker until conditions warrant the installation of a hot mill. The initial layout of Steckel mills to be installed by the Follansbee company contemplates six units, although only one will be installed at present.

Weirton Steel Co., Weirton, W. Va., which has operated a 38-inch and a 26-inch Steckel mill for many months on tin plate production, recently purchased a 20-inch unit.

The 20-inch Steckel cold mill recently purchased by the American Rolling Mill Co., for its Butler, Pa., division was placed in operation last week.

OCTOBER IRON PRODUCTION

	No. in blast last day of month Oct.	Sept.	Total tonnage made Merchant	Nonmerchant
Ohio	15	13	24,259	187,260
Penna.	14	15	26,027	144,493*
Alabama	5	3	35,590	12,991
Illinois	4	4	17,639	33,572
New York	3	2	21,385	27,852
Colorado	0	0		
Indiana	4	4		
Maryland	2	2	284	80,860
Virginia	0	0		
Kentucky	1	1		
Mass.	0	0		
Tennessee	0	0		
Utah	1	1		
West Va.	1	1	3,764	28,672
Michigan	0	0		
Minnesota	0	0		
Missouri	0	0		
Total	50	46	128,948	515,700*

*Includes ferromanganese.

Warren Tool Corp. Takes Over Tool, Forge Business

Warren Tool Corp., Warren, O., recently organized by the bondholders' committee of the Warren Tool & Forge Co., will continue the forged steel hand tool business and the malleable iron foundry of the old company, which has been in operation since 1912. Activities will be concentrated on its 150 styles of forged steel hand tools and its line of railroad track tools of special alloy steel. Ample resources have been provided and the plant will be improved and additional forging and heat treating equipment are being installed.

C. L. Schoonover, who operated the business for the bondholders' committee, will be president and general manager, Howard C. Mull vice president in charge of sales, R. E. Gibson treasurer, and Thorn Pendleton secretary. Directors are: C. L. Schoonover, Paul W. Frum, Cleveland; John T. Stewart, Butler, Pa.; Willard W. Wilson, Arthur G. McKee, Cleveland.

Farrell Plant at Capacity

Pittsburgh—American Sheet & Tin Plate Co. operated its Farrell, Pa., plant at capacity last week, with 30 mills on five days. This compares with 15 mills on four days weekly, the previous rate.

New Society for Engineers

R. M. Sanders, 460 West Thirty-fourth street, New York, is temporary chairman of a movement to organize a new society of professional engineers, to be known as the National Association of Engineers, to enroll the approximately 100,000 electrical, chemical, mechanical, civil and other engineers. Headquarters of the association are at 103 Park avenue, New York. It is claimed that the objective of the new association does not conflict with the older national engineering bodies, but aims to supplement their work from the human rather than the scientific standpoint.

Schwab, Receiving Medal, Defends Mechanization

"Every industry must make readjustments to changing conditions," said Charles M. Schwab, chairman, Bethlehem Steel Corp., in accepting award of the Melchett medal from the British Institute of Fuel, in London, Oct. 19.

"Industry's variability to make such readjustments is a guarantee of its survival and progress. There must be consolidation to effect economies.

"I do not minimize the difficulties of this adjustment. Right now there is a period of stagnation in most industries, but looking at the matter over a period of years we see that as industries become more efficient, costs are reduced, the buying power of the public is increased, new products come into demand and great opportunities develop for the individual worker."

Mr. Schwab was to arrive back in New York Nov. 8.

Corrigan, McKinney Steel Wins Safety Award

Corrigan, McKinney Steel Co., Cleveland, won first place in the steelworks safety contest conducted by the National Safety council, it was announced recently at the council's twenty-first annual safety congress in Washington. This was for the first six months of 1932, in which 1,756,160 man-hours were worked with an accident frequency of 1.139 per million man-hours. The company was awarded a bronze trophy. It also won first place in the contest for the full year 1931. The time-period for the contest is being changed to 12 months ending with June 30, hence the award for the first half of 1932.

To Produce 'Steel' at Fair

Blast furnaces, open-hearth steel furnaces and bessemer converters will be simulated at the exhibit of the manufacturing subsidiaries of the United States Steel Corp. at the 1933 World's fair in Chicago. The

exhibit in effect will take exposition visitors inside the gates of a steel plant, and specially designed lighting apparatus will give an appearance of full operation. What appears to be hot metal will flow from the furnaces at regular intervals.

September Sheet Output Largest Since May

Sheet sales reported by the National Association of Flat Rolled Steel Manufacturers averaged 2631 net tons daily in September, up from 2133 tons in August. Daily production was 2994 tons, compared with 1852 tons in August; and shipments, 2516 tons, against 1977 tons in August. The sales and shipments averages were larger than in any month since June; the production average, largest since May.

September sales totaled 78,925 tons; production, 89,817 tons; and shipments, 75,490 tons. Unfilled tonnage as of Oct. 1 amounted to 86,570 tons, compared with 81,283 tons, Sept. 1.

Total sheet capacity in the United States for September was approximately 550,000 tons, and the capacity on which the association's reports are based was 376,500 tons.

Universal Cement Resumes

Universal-Atlas Cement Co., subsidiary of the United States Steel Corp., has resumed operations at its Hammond, Ind., plant after being inactive since April.

Collins Iron Works Reopens

The R. O. Collins Iron Works, Tallahassee, Fla., has reopened with a full force after being shut down, or working part time, since Sept. 27, when the plant was damaged by fire.

Action on Dumping Seen Near; Bridges, Pipe Lead R.F.C. Loans

WASHINGTON — Officials of the customs bureau of the treasury department appear to be endeavoring to reach speedy conclusions following the dumping hearings on iron and steel products conducted the past two weeks.

While there has been considerable talk that dumping or suspected dumping orders would be issued, none had been to the close of business Nov. 4. Presumably, the announcement will develop first with the appraiser at some port of entry.

The tariff commission still has under advisement the request of the President that it again consider 16 schedules under the flexible provisions of the tariff law, with the intent of making adjustments to offset further depreciation in foreign currencies. Such action involves many important economic considerations.

□ □ □

Reconstruction Finance Corp. has approved a loan of $3,400,000 for the Catskill bridge across the Hudson river at Catskill, N. Y., to require 12,000 tons of steel, plus substantial amounts of other material. The bridge, to be a cantilever and suspended span type structure, will have a main channel span of 800 feet and an overall length of 4823 feet. The Corporation will purchase bonds from the New York State Bridge Authority.

Other R. F. C. authorizations include:

New York Central railroad, $2,500,000 for repairing 10,000 steel box and 3000 automobile box cars, the former averaging $150 per car and the latter $300. If conditions warrant, the automobile cars may be eliminated and box cars reduced to 7500, substituting 4000 hopper and 1000 stock cars.

Hobart, Okla., $250,000 as partial cost of a dam and water supply system requiring 1800 tons of cast iron pipe and 36 tons of concrete reinforcing bars.

Bowling Green, Ky., $630,000 for constructing a sewer system requiring 275 tons of cast iron pipe.

Madison Heights, Va., $62,500 for a water system requiring 450 tons of cast iron pipe and a 300,000-gallon steel storage tank.

Hamburg, N. Y., $70,000 to Wanakah Water Co. for 800 tons of cast iron pipe and a 250-000-gallon steel tank.

Eagle Pass, Tex., $1,476,000 to Maverick County Water Control District No. 1, for repair and construction of an irrigation and power project. For material, including steel, $230,500 will be expended.

Hillside Housing Corp., New York, $3,957,000 for low rental apartments to house 1581 families. Amount of steel not estimated.

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Bid of the Boston Iron & Metal Co., Baltimore, to dismantle and scrap 124 surplus ships for $1.51 per gross ton of recoverable scrap, at not less than three ships a month, has been formally accepted by the shipping board. Some of the scrap-

THIS COMBINATION CRUDE AND FUEL OIL FLASH TOWER, 11 feet inside diameter, of ⅞-inch plates 96 feet long overall and weighing 174,580 pounds, was electric fusion welded by the M. W. Kellogg Co., New York, for the Standard Oil Co. of Indiana

ping may be sublet to the Federal Shipbuilding Co., Kearny, N. J., Sun Shipbuilding & Dry Dock Co., Chester, Pa., and a yard at New Orleans or Mobile, Ala.

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Nearly one-half the items in the Australian tariff schedule were revised provisionally, Oct. 14, according to the department of commerce. Like the new Canadian duties, marked preference is accorded the United Kingdom. Increases of 5 per cent ad valorem are made in tubes, pipes, hoops, bolts, nuts, rivets, wrought and malleable pipe fittings, and roller and ball bearings. Increases of 7½ per cent are ordered in structural material and 10 per cent in nails, brads and staples.

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Florence Pipe & Foundry & Machine Co., Florence, N. J., has filed a complaint with the interstate commerce commission against the New York, New Haven & Hartford railroad claiming that the rate on cast iron pipe from points in New Jersey, Tennessee, and Pennsylvania, to destinations in New York and New England are unreasonable.

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Jackson Iron & Steel Co., Jackson, O., has been granted a refund by the bureau of internal revenue amounting to $71,221.07 as overassessment of income and profits tax for 1917.

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Senator David Reed, Republican, of Pennsylvania, states that congress is almost certain to revise tax legislation at the session beginning Dec. 1, and that a sales tax is probable.

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Interstate commerce commission has been asked by the Duluth & Iron Range railroad, a subsidiary of the United States Steel Corp., to reopen for further hearing proceedings in which the commission seeks to recapture alleged excess net railway operating income.

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Secretary of Commerce Chapin has appointed 14 engineers, architects, builders and contractors to form a committee to further new construction methods utilizing wood. One objective will be to emphasize new principles of wood construction employing metal or wood connectors for the strengthening of joints. Maj. H. S. Bennion, director of engineering, National Electric Light association, New York, is chairman.

Sheet Film Is Ready

A new educational motion picture film has been prepared under the supervision of the bureau of mines, Washington, entitled "The Manufacture of Sheet Steel and Tin Plate." It was prepared in co-operation with a manufacturer.

Financial News of Steel Industry

ALLEGHENY STEEL CO., Brackenridge, Pa., reports net loss of $288,903 in the third quarter. On the same basis, this compares with net loss of $170,786 in the second quarter.

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Follansbee Bros. Co., Pittsburgh, for the third quarter reports net loss of $798,508 after charges, compared with loss of $650,163 in the third quarter of 1931 and loss of $314,902 in the second quarter of 1932.

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Granite City Steel Co., Granite City, Ill., reports net profit of $19,906, after charges, in the third quarter, compared with net profit of $27,063 in the second quarter. For nine months of 1932 the company's net profit after taxes and charges is $9072, equivalent to 3 cents a share, against $339,344 or $1.16 a share in the corresponding 1931 period.

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Otis Steel Co., Cleveland, reports for the third quarter loss before depreciation, taxes and interest was $620,626, compared with $459,009 in the second quarter.

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Colorado Fuel & Iron Co., Denver and Pueblo, Colo., reports a deficit of $888,045, after charges and interest, for the third quarter, compared with a loss of $795,190 in the second quarter. Losses for the nine months ended Sept. 30 totaled $1,381,468 in 1932 and $425,411 in 1931.

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Virginia Iron, Coal & Coke Co., Roanoke, Va., reports net loss of $23,894, after charges, in the third quarter, compared with a net loss of $17,914 in the second quarter of 1932 and net loss of $7763 in the third quarter of 1931.

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Interlake Iron Corp., Cleveland, reports for the first nine months of 1932 net loss of $1,304,930, compared with loss of $505,032 in the same period of 1931. For the third quarter, net loss was $338,701, compared with $574,734 in the second quarter.

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Harbison-Walker Refractories Co., Pittsburgh, reports net loss of $149,800 for the third quarter. For nine months of 1932, net loss was $277,100.

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Pittsburgh Screw & Bolt Corp., Pittsburgh, reports net loss of $187,801 for the third quarter. Net loss for the first nine months of 1932 is $621,728.

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United Engineering & Foundry Co., Pittsburgh, has declared a quarterly dividend of 75 cents on the common and regular quarterly dividend of $1.75 on the preferred stock. Both are payable Nov. 11 to record of Nov. 1.

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General Refractories Co., Philadelphia, reports net loss of $615,793, after charges and taxes, in nine months of 1932. During the first three quarters of 1931, net income was $313,026.

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Lukens Steel Co., Coatesville, Pa., through its directors has adopted a plan effecting an adjustment in its bonded debt situation. An agreement has been reached between directors and a bondholders' committee.

Sheet and Tin Plate Mill Wages Unchanged

Wage rates in sheet and tin plate mills having contracts with the Amalgamated Association of Iron, Steel and Tin Workers will be unchanged for November and December, the average sales price of Nos. 26, 27 and 28 gage black sheets holding at 2.30c per pound in September and October. This has been the average price, as determined by representatives of the mills and the Amalgamated association, since the January-February period. Further comparisons:

	1932	1931	1930
Jan.-Feb.	2.40c	2.60c	3.05c
March-April	2.30c	2.65c	2.90c
May-June	2.30c	2.50c	2.90c
July-Aug.	2.30c	2.40c	2.75c
Sept.-Oct.	2.30c	2.40c	2.75c
Nov.-Dec.		2.40c	2.70c
Yearly average		2.49c	2.84c

Would Lower Scrap Limit

New York chapter of the Institute of Scrap Iron and Steel has recommended that the department of commerce standard for iron and steel scrap be revised to eliminate as impractical from the specification for No. 1 heavy melting steel scrap the phrase "no piece to weigh less than 5 pounds."

National Founders To Meet

Thirty-sixth annual meeting of the National Founders association will be held at Waldorf-Astoria hotel, New York, Nov. 16 and 17. J. M. Taylor, 29 South La Salle street, Chicago, is secretary.

Canada Makes Less Fencing

Canadian production of wire fencing in 1931 totaled 34,470,689 pounds, compared with 54,906,745 pounds in 1930. Eight manufacturers of fencing are reported for Canada.

Industrial Men in the Day's News

Eugene H. Heald, Vice President, American Bridge Co.

IN 30 years he has risen from the engineering staff to a vice presidency of this Steel corporation subsidiary.

CHICAGO, New Orleans, Richmond, Va., New York, again Chicago, and recently Pittsburgh have been the scenes of his activity.

IN his new post he is successor to the late Arthur L. Davis.

Blank & Stoller

EUGENE H. HEALD, formerly assistant general contracting manager at Pittsburgh for the American Bridge Co., Pittsburgh, has been named vice president and general contracting manager.

Dating his experience with the American Bridge Co. over the past 30 years, Mr. Heald has served in various districts of the country. He entered the engineering department at Chicago in 1902, and after remaining for a short while became identified with the contracting department, also at Chicago.

Two years later, in 1904, he was appointed contracting manager in charge of the New Orleans office, where he remained until 1907, when he opened the Richmond, Va., office as contracting manager. Mr. Heald's next position was with the company in New York in 1911. From there he was moved to the Chicago office in 1913 as assistant division contracting manager, and in 1926 was appointed division contracting manager with headquarters at Chicago.

Mr. Heald went to Pittsburgh in September, 1931, as assistant general contracting manager and in his new position he succeeds Arthur L. Davis, recently deceased.

He is a member of the American Iron and Steel Institute.

E. GOODWILLIE, general manager of structural and plate sales of the Bethlehem Steel Co., Bethlehem, Pa., becomes special representative of the company with the consolidation of the structural and plate and the general sales forces of the company. Mr. Goodwillie's former office is discontinued.

C. W. Bretland is appointed assistant manager of sales in the New York district offices, and his former position as district manager of structural and plate sales is discontinued.

V. A. Jevon, formerly manager of structural and plate sales at Chicago, has been appointed assistant manager of sales in the Baltimore district.

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Dr. Willis Rodney Whitney, organizer and for 32 years director of the research laboratory of the General Electric Co., Schenectady, N. Y., retired on account of poor health Nov. 1. He continues as vice president in general charge of research. Doctor Whitney came to the General Electric Co. from the Massachusetts Institute of Technology in 1900, when the research laboratory was established by Edwin W. Rice Jr.

Dr. William David Coolidge Sr., associate director of the laboratory, has succeeded Doctor Whitney.

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F. J. Compson, formerly steel buyer for the Oakland Motor Car Co., Pontiac, Mich., has been appointed steel buyer for the Buick Motor Co., Flint, Mich., to succeed Hazen S. Carson, whose resignation was noted in STEEL for Oct. 31.

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A. L. Freedlander, vice president and factory manager, Dayton Rubber Mfg. Co., Dayton, O., who has been in South America investigating the possibilities in development of rubber plantations, sailed from South America to Germany on the Graf Zeppelin, Oct. 29. In Europe, Mr. Freedlander is conferring with automotive engineers in regard to recent developments in his company's products.

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W. A. Taylor has been named manager of the Chicago office of the A. M. Byers Co., Pittsburgh. He formerly was assistant manager, and succeeds M. G. Henderson, resigned.

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Harvey H. Weber has been appointed superintendent of the Burnside Steel Foundry Co., Chicago.

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C. S. Wagner has been appointed general sales manager of the National Equipment Corp., Milwaukee, of which the Koehring Co. is the major unit. He formerly was sales manager and later president of the Insley Mfg. Co., Indianapolis, which at one time was a member of the National Equipment Corp. group.

MIRRORS OF MOTORDOM

DETROIT

PLYMOUTH, first to announce its line for 1933, has reduced prices approximately $60, slightly undercutting the comparable Ford eight models and tightening competition in the low-price field.

From bumper to bumper, the overall length of the new Plymouth six is 172 inches, identical with the 4-cylinder line now displaced. But to facilitate turning and improve riding qualities the wheels are closer spaced, shortening the wheelbase from 112 inches to 107¾.

The 4-bearing 6-cylinder motor, 3⅛ x 4½ inches, is rated at 70 horsepower. Floating power, freewheeling, automatic clutch, hydraulic brakes, centrifuse brake drums, oilite springs and safety glass in the windshield are featured.

Probably the most important mechanical change, from the standpoint of the steel industry, is the adoption of a tubular front axle, a design with which many manufacturers have been experimenting, but only Franklin has been using.

Although the weight of the 4-door sedan has been reduced from 3000 pounds to slightly under 2800, the frame has been greatly strengthened by resort to a full X-cross member of the box type, this continuing completely around the inside of the frame in front and providing what amounts to a double frame for the engine.

Pronounced Streamline Noted

Ball bearings are used in the universal joint at the rear end of the tubular drive shaft. A new U-type shackle fastens the rear springs to the frame. Wire wheels with 17 x 5.25-inch tires are standard equipment.

Most striking externally is the streamline effect. The rake of the radiator shell is even more extreme than that of Graham. The one-piece front fenders come down in front as far as the bumper and follow the contour of the wheel closely with a wide-rolled edge, not dissimilar to the style of the larger Hupp. By using a double drop frame with a marked kickup over the axles the body is lowered 3 inches.

The new Plymouth line consists of a 4-door sedan priced at $575, Detroit, a rumble seat coupe at $545, a convertible coupe at $595 and a standard coupe at $495, the "teaser" of the line. For the present, at least, there will be no 2-door sedan.

Briggs and Chrysler are making the bodies. Current production is approaching 1000 a day and November output is scheduled at 20,000. Since this will average only three cars per dealer, an active December is also in prospect.

First New Model To Appear

While private showings now are being made, following the radio broadcast to dealers, the public display will not be made until Nov. 17. It was expected that Buick would be first with its 1933 models but delay at Flint and speed by Plymouth upset this.

Disclosure of the price and specifications of the new Plymouth helps to clarify the situation in the low-price field which is growing increasingly tense. No other manufacturer, including Ford, has announced his plans but Detroit is drawing conclusions from certain indicators which normally are trustworthy.

Last summer Essex plumbed a new price bottom with the $425 terraplane. Continental Motors, whose only assembled product at this time is the DeVaux, is confidently understood to be developing a 100-inch wheelbase 4-cylinder car to sell for about $350. Willys will shortly put into production a small car lower priced than any previous Willys-Overland.

Whether it will inject it into the market in the near future is uncertain, but Chrysler has done experimental work on a four, presumably for the Dodge line. Chevrolet in addition to its regular line will compete with a second car lower priced than any previous Chevrolet.

All this is competition for Ford. The gates at Fordson are securely locked, but if other manufacturers choose to invade the field which Mr. Ford pioneered, he is not one to relinquish his initial advantage. Predictions concerning Ford are always subject to change, but the consensus of opinion in Detroit at this time is that there will be a Ford four in the market below $400, there will be a six in what might be termed the present price range of Chevrolet and Plymouth, and the present Ford eight will be revised, put into a chassis of about 112 inches and possibly slightly advanced in price.

Said to be the first time in history, Ford is offering bonuses to the sales force which amount to $5 per car for the sale of four cars before Jan. 1, an additional $5 for every car sold between 4 and 20 and for salesmen closing on 20 or more, a further $5 on each. Ford recently recommended that dealers cut service charges 20 per cent.

There also has been some extensive but quiet buying of machine tools by Ford.

G. M. Gaining Momentum

Buick has encountered unexpected delays in getting assemblies of its 1933 line under way, but will contribute several thousand units, at least, to November automobile production. Chevrolet likewise is on the verge of actual assembly.

The original schedule of 10,000 Buicks by January show time stands, as does the Chevrolet program for 55,000 to 65,000. But Chevrolet has just decided to schedule 50,000 units for January. This confidence by

Chevrolet and Plymouth in the low-price market is taken to assure consecutive gains in production for the industry in November and December.

General Motors units, excepting Cadillac-LaSalle, are actually short of cars, so closely was output of the 1932 line budgeted. It is understood that Chevrolet could have sold 4800 more cars recently had dealers been able to make prompt delivery. Buick likewise has been short of some models.

Seek Lower Scrap Rate

Boston—Reduction in freight rate on old rails from Worcester and Glenwood to Danville, Vt., is docketed on minimum shipments of 56,000 pounds. From Worcester a rate of $3.20 on 2240 pounds is proposed against the present rate of $4.60. From Glenwood the rate would also be $3.20 against a present rate of $4.80.

August Hoist Orders Drop

New York—Members of the Electric Hoist Manufacturers' association report the number of hoists ordered during September decreased 17.333 per cent as compared with the previous month, and the value of such orders decreased 31.069 per cent as compared with August. Shipments were 24.993 per cent greater in September than in August.

More Own G. E. Stock

General Electric Co., Schenectady, N. Y., reports the number of stockholders as of Sept. 30 was 178,579, an increase of 38,800, or 28 per cent over a year ago. There has been an uninterrupted increase in the number of General Electric stockholders since Dec. 31, 1925, when there were 35,707, or only one-fifth as many as at present.

Fewer Briquets Are Made

Bureau of mines, Washington, places production of fuel briquets in 1931 at 698,316 net tons, or 32.1 per cent below the 1,028,865 tons of 1930. The value of 1931 output was $5,260,585, or 34.5 per cent less than the $8,028,736 in 1930.

Bearing Value $49,169,653

Total value of ball and roller bearings and parts manufactured by the 53 establishments in 1931 for sale totaled $49,169,653, correcting a recent erroneous figure given in this publication.

Obituaries

MAJ. WILLIAM LAIDLAW, 52, president and manager of William Laidlaw Inc., manufacturer of metal cutting band saws and special machinery, Belmont, N. Y., died Oct. 27. A native of Sheffield, England, he became foreman of the Clark Tool Works at Belmont, in 1905, later moving to Whitewater, Wis. Following service during the World war he returned to Belmont and again became connected with the shops, purchasing them in 1925 and then operating them under his name.

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Artemus W. Pickard, 62, vice president of the Bass Foundry & Machine Co., Ft. Wayne, Ind., died recently.

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Walter J. Callahan, prior to 1925 associated with the National Bolt & Nut Co., Pittsburgh, died at Butler, Pa., Oct. 27.

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Henry J. Karges, 66, for the past 15 years president of the Indiana Stove Works, Evansville, Ind., with which he had been connected for 48 years, died recently.

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Harry Bainbridge, 69, assistant superintendent of the Keystone structural shop of the Jones & Laughlin Steel Corp., Pittsburgh, died at Pittsburgh, Nov. 3. He had been identified with the company for 46 years.

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Harry K. Runnette, former resident of Pittsburgh, died at Denver, Oct. 24. At one time he was identified with the old Keystone Bridge Co., Pittsburgh, and at the time of his death was affiliated with the American Smelting Co., Denver.

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George Baily, 52, assistant sales manager, merchandising department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., at Mansfield, O., died at Pittsburgh, Oct. 29. Mr. Baily had been identified with the Westinghouse company for many years in its Cincinnati, Pittsburgh, New York and Pacific coast offices.

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Burton L. Verner, for a number of years assistant purchasing agent at Chicago for the former Republic Iron & Steel Co. and later connected with the Highland Iron & Steel Co., the Interstate Iron & Steel Co. and the Empire Steel Corp., Chicago, died Oct. 23. He was a past president of the Chicago Purchasing Agents association.

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Charles S. Proudfoot, general manager of the Vanadium Corp. of America plant at Niagara Falls, N. Y., died Oct. 29. At various times Mr. Proudfoot was in the employ of the United States Steel Corp., Bethlehem Steel Co. and Midvale Steel & Ordnance Co. He had served as president of the Association of Iron and Steel Electrical Engineers.

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J. J. Gilmore, former manager of sales of the American Steel & Wire Co., Birmingham, Ala., whose death Oct. 24 was noted in STEEL for Oct. 31, started in the wire industry in the early nineties with the Consolidated Steel & Wire Co. at Atlanta, Ga. When the American Steel & Wire Co. was formed he was transferred to the Birmingham office as manager of sales and thus continued until ill health necessitated his retirement last Oct. 1.

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William C. Lowry, 83, for 33 years identified with the United States Steel Corp. in the Pittsburgh district, died at Wilkinsburg, Pa., Oct. 30. He was born at Poland, O., and learned the machinist's trade in Sharon, Pa. During most of his affiliation with the Steel corporation, he was an inspector at the Homestead works of the Carnegie Steel Co. He was also a master mechanic for the Ohio Steel Co., Youngstown, O.

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Richard W. Dyer, 70, president of Dyer Bros. Golden West Iron Works, San Francisco, died Oct. 19. He was born in San Francisco, June 21, 1862, and for many years was connected with Dyer Bros., operating an ornamental iron works shop. In 1902 he organized the company of which he was president at the time of his death and since then has been actively identified with the structural steel fabricating industry. Geo. H. Dyer, his brother, has been elected president.

G. E. Billings Decline

Sales billed by the General Electric Co., Schenectady, N. Y., in the first nine months of 1932 totaled $113,049,474, or 45 per cent under the $206,138,967 of the corresponding period a year ago. Profit available for common dividends in the first nine months was equal to 34 cents a share, against $1.07 a year ago.

Cuts Radiator Assessment

Dunkirk, N. Y., has voluntarily reduced the tax assessment value of the National Radiator Co. plant in that city 50 per cent, to $60,000. In turn, the company states it will resume as soon as possible.

Milwaukee Die Casting Co., Milwaukee, reports September bookings were 50 per cent over August, with October holding at the September level. Personnel has been built up to normal.

EDITORIAL

Industrial House Cleaning Trims Idle Capacity

DURING the long period of slow business recovery much will be said and written of over-capacity and over-production. No one will deny that the country has far more plant facilities in practically every industry than are required for any demand that reasonably can be expected. At the moment the shadow of idle plant and equipment looms as a sinister destructive influence which makes for fierce competition, demoralized prices and a train of other evils.

While not attempting to minimize the immediate effect of excessive productive facilities, we offer the suggestion that the bugaboo of over-capacity is overrated. Many of the statistics of capacity are subject to revision downward because they do not reflect the factors of obsolescence, uneconomic location, financial inability to continue operations, abandonment of unprofitable departments, etc. Loss of capacity through these and other causes eventually will be registered in statistics, but in a period like the present there necessarily is a lag between the time the facilities become inoperative and the time that fact finds its way into the published records.

Present Capacity Tabulations Include Units Doomed to Scrap Heap

The difficulty of presenting an accurate inventory of capacity is illustrated by the existing tabulations on blast furnaces and steelworks. Great care has been taken by those who compile this information to eliminate stacks and open-hearth furnaces that have been idle for a long time or are known to be incapable of operation. Yet in spite of all precautions that can be taken, the lists of blast furnaces and steelworks representing "practical available capacity" invariably embrace certain idle units that never will operate again.

This also is true of productive capacity in rolling mills, foundries, and forge, fabricating and machine shops. Throughout every branch of the iron and steel industry there are plants and equipment that are doomed to be abandoned, although at the present time the owners themselves consider this capacity to be effective. In many cases the proprietors expect that their facilities will be put back into use when prices rise to a certain level. These plants are something like the familiar "snowbird" coal mines, which operate only when the selling price of coal is high enough to make high-cost operations profitable.

Under existing conditions and those likely to prevail until long after business has recovered, inefficient production facilities will have little if any opportunity to figure as active capacity. The longer equipment is idle, the greater will be its disadvantage in competition with modern, low-cost units. To bear the overhead of carrying idle facilities over a long period in the hope of getting one's money back in a future period of high prices does not appear to be the good gamble that it was several decades ago.

Obsolescence, Freight Rates, Taxes and Mergers Help To Revamp Industry

Therefore in the next few years we may expect to witness a rapid abandonment of out-moded plant and equipment. In fact, the process already is underway. Manufacturers who in prosperous periods added foundries and forge shops as departments because they thought it was advantageous to be "self-contained" are abandoning their castings and forgings facilities and purchasing the products from commercial shops. High-cost, old fashioned blast furnaces, steelworks and rolling mills are being dismantled as rapidly as the steel companies can make the necessary adjustments. The larger corporations, with widely scattered plants, are realigning and redistributing production facilities with a view of concentrating operations at the most advantageous points. All industry is trying to lighten the burden of overhead, and this incentive in itself is a mighty factor in trimming down unprofitable producing capacity.

While obsolescence may seem to be the governing factor in many cases where plants are dismantled, it is only one of several important considerations. Shifts in freight rates frequently serve to drive well-managed businesses to the wall or to force them to move to new locations. Right now the threat of prohibitive taxes is causing many boards of directors to consider seriously the advisability of moving plants to states where taxes are less oppressive. Mergers of companies and the resultant combining or concentrating of plant facilities likewise are tending to reduce the total of available capacity.

All of this constitutes industrial house cleaning on a scale unprecedented in this young country. Each act in itself spells hardship and disaster for somebody, but collectively the house cleaning is a good thing for industry. He who cleans his own house thoroughly will have nothing to fear.

THE BUSINESS TREND

Business Glad Campaign Is Nearing End

BUSINESS will breathe easier when the election is over. Fantastic predictions have been made as to what the outcome will mean to industry. Reality will fall far short of the extreme fears and hopes that have been expressed in many quarters. The important point, in our opinion, is that with the election settled and in the background, business will be released from the grip of a spell of uncertainty, which during the last month has played havoc with the exercise of sound business judgment.

In spite of the effect of the political campaign in influencing management in some cases to withhold commitments, the trend of business continued slightly upward throughout October. Signs. of minor tapering off appeared near the close of the month, but their significance was lost in the complications of election sentiment.

Operations in steelworks have held steadily the gains accumulated since late in August. Today the spread between the rate of current operations and that of a year ago is only 7 or 8 points—the narrowest margin since early in 1931.

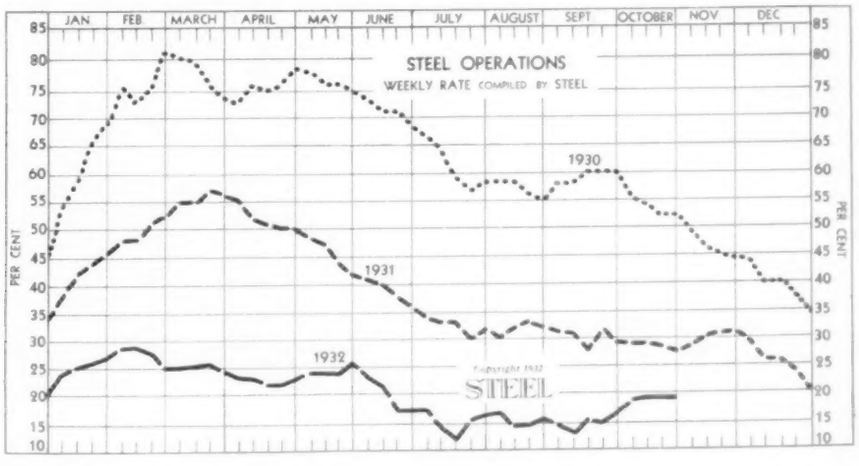
The late seasonal peak in railroad car loadings gives promise of continued improvement in railroad earnings. Some tonnage from this source undoubtedly is in prospect, but it will be confined to emergency needs for some time to come. Soft coal output reached a high point in mid-October after a sharp climb of four months' duration. The gains from June to October were considerably greater in percentage than in the corresponding periods of 1931, 1930 or even 1929.

Final statistics for September revealed a mixed trend. Orders for machine tools and foundry equipment declined, while those for steel castings gained slightly. Automobile output dropped as expected. Present plans among motor car manufacturers point to a rise in output in November.

Industry Holding Recent Gains But Trend Lacks Underlying Strength

Employment has been expanding slightly for several months and favorable signs still prevail. Some current work is directly traceable to R. F. C. activities. Beneficial effects of the "share-work" campaign also are noticeable.

However the trend of activity still lacks strength and positive direction. The nation still is awaiting the measure of unity of purpose and action that is necessary for a sustained march toward recovery.



1932

Per Cent
Oct. 29 ..... 19.5
Oct. 22 ..... 19.5
Oct. 15 ..... 19.5
Oct. 8 19

1931

Per Cent
Oct. 31 28
Oct. 24 27
Oct. 17 28
Oct. 10 29

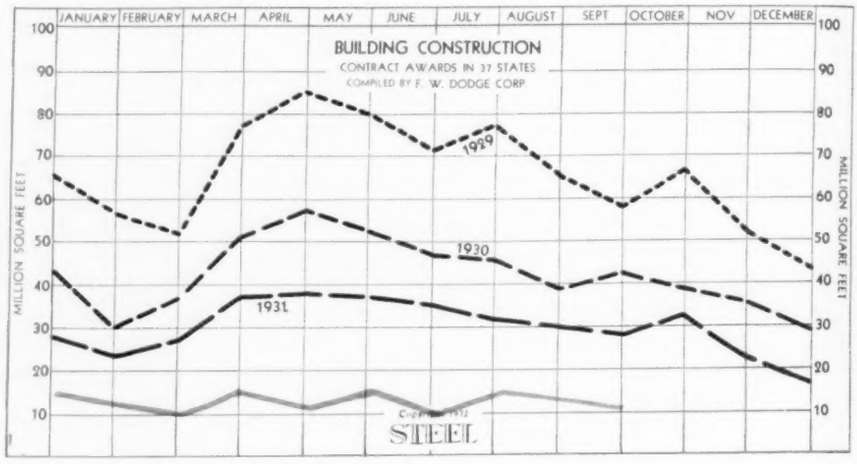
	Per Cent
September, 1932	27.7
August, 1932	30.3
September, 1931	63.1

Index of Machine Tool Orders Declines in September

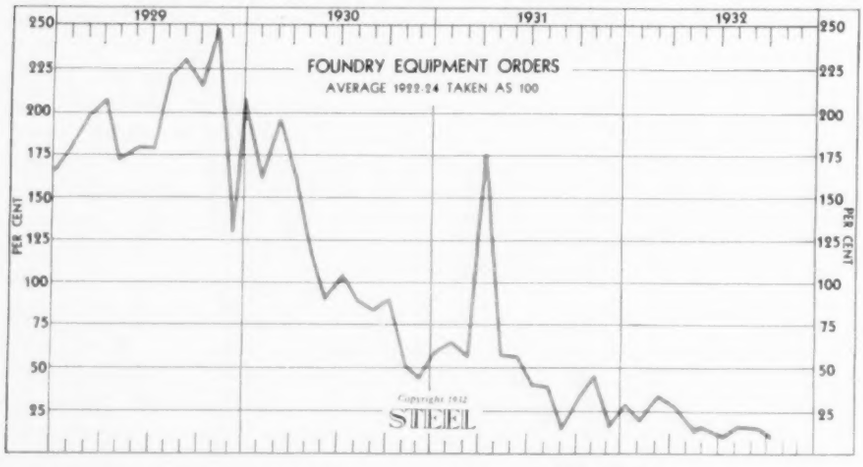
The three months moving average of machine tool orders continued to decline in September according to the National Machine Tool Builders' association. The September index of gross orders stood at 27.7 compared with 30.3 for the preceding month and 63.1 for September last year. September shipments at 42.5 were the heaviest since April while the index of unfilled orders shows continued weakness, dropping to 59.6, a new low.

Building Awards Show Slight Loss in September

Building construction declined slightly in September, both in valuation and in new floor space, according to the report of the F. W. Dodge Corp. Awards in 37 eastern states involved 13,513,900 square feet in September as compared with 13,863,500 in August. Total valuation dropped over $6,000,000 during the current month. Residential building during September showed a gain of nearly 10 per cent in valuation over the August record. Normally a decline of about 4 per cent is registered during this period.



	Square Feet
September, 1932	13,513,900
August, 1932	13,863,500
September, 1931	30,068,100



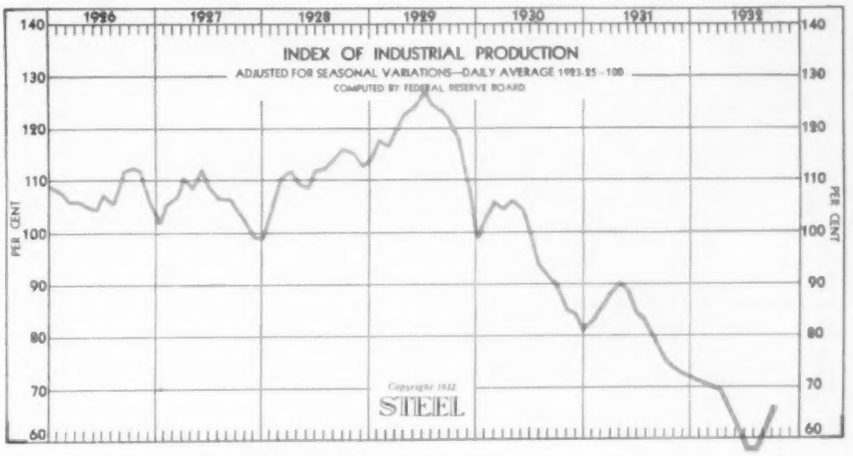
	1932	1931
September	11.9	31.9
August	18.6	16.9
July	18.7	38.7

Foundry Equipment Orders Down in September

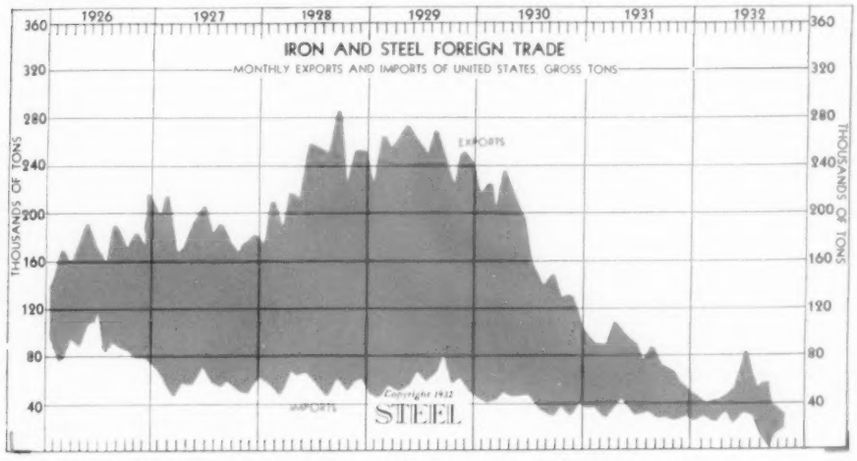
The index of foundry equipment orders declined from 18.6 in August to 11.9 for September. This compares with 31.9 for September last year. The shipment index stood at 10.2 for the current month which compares with 29.8 for August and 29.6 for September, 1931. According to the report from the Foundry Equipment Manufacturers' association unfilled orders were up slightly to 17.6 against 15.2 for the previous month.

Industrial Production Index Reflects Sharp Recovery

The index of industrial production as compiled by the Federal Reserve board rose sharply in September. The index was up six points to 66 from the revised index for August. Among the component parts of the index, manufactures was up six points to 65 with adjustment for seasonal variations. Building construction remained steady at 30. In the manufacturing group, iron and steel gained five points to 28, textiles were up 12 points to 102.



September, 1932	66
August, 1932	60
September, 1931	76



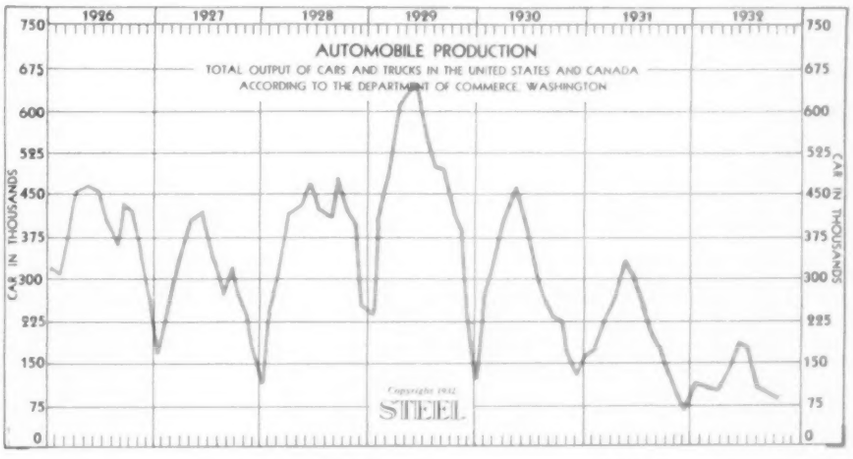
Exports	Tons	Imports	Tons
Sept., 1932	36,038	Sept., 1932	29,241
Aug., 1932	39,955	Aug., 1932	23,623
Sept., 1931	69,778	Sept., 1931	30,966

Iron and Steel Exports Up; Imports Gain 24 Per Cent

Exports of iron and steel products in September at 36,038 gross tons showed an increase of 3083 tons over the previous month and 48 per cent below the tonnage shipped during September last year. Imports in September were 29,241 tons or nearly 24 per cent higher than in the previous month. During September last year imports totaled 30,966 gross tons. The favorable trade balance for the current month declined nearly 3,000 gross tons.

Automobile Industry Slow as September Output Drops

Automobile output continues to taper off in preparation for new winter models. With production in September aggregating only 86,483 units the automobile industry has declined to the lowest levels of the depression. Last year September output totaled 143,212 passenger cars and trucks. According to the monthly report of the United States department of commerce output thus far this year aggregates 1,210,579 units compared to 2,196,690 during the 9-month period last year.



September, 1932	86,483
August, 1932	94,391
September, 1931	143,212

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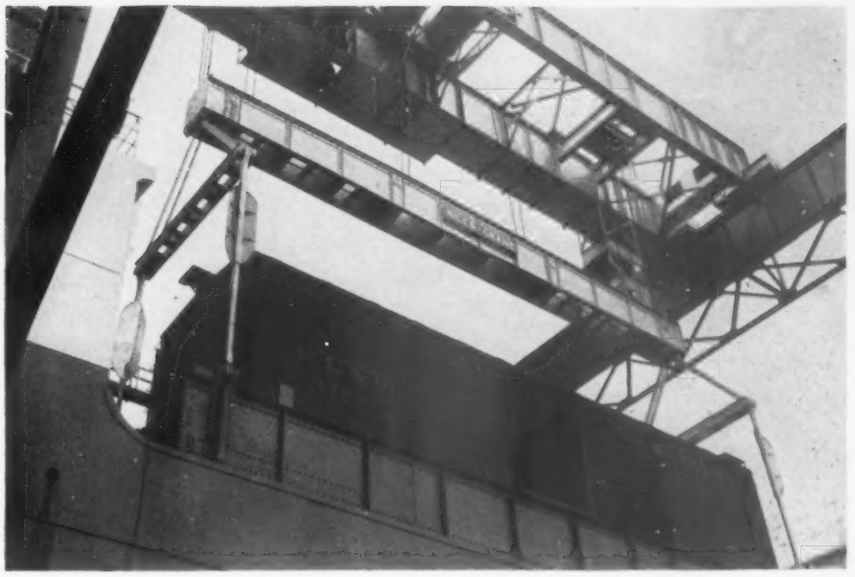
WHERE a freight car is an easy lift. New types of ocean going vessels called seatrains are built to carry 100 loaded cars, equivalent to a train a mile long, on tracks on four decks. As depicted here, by means of a cradle and a crane, an entire car is hoisted bodily into the hold for the triangular run between New York, New Orleans and Havana. This crane, installed at the new terminal in Hoboken, N. J., has a capacity of 125 tons

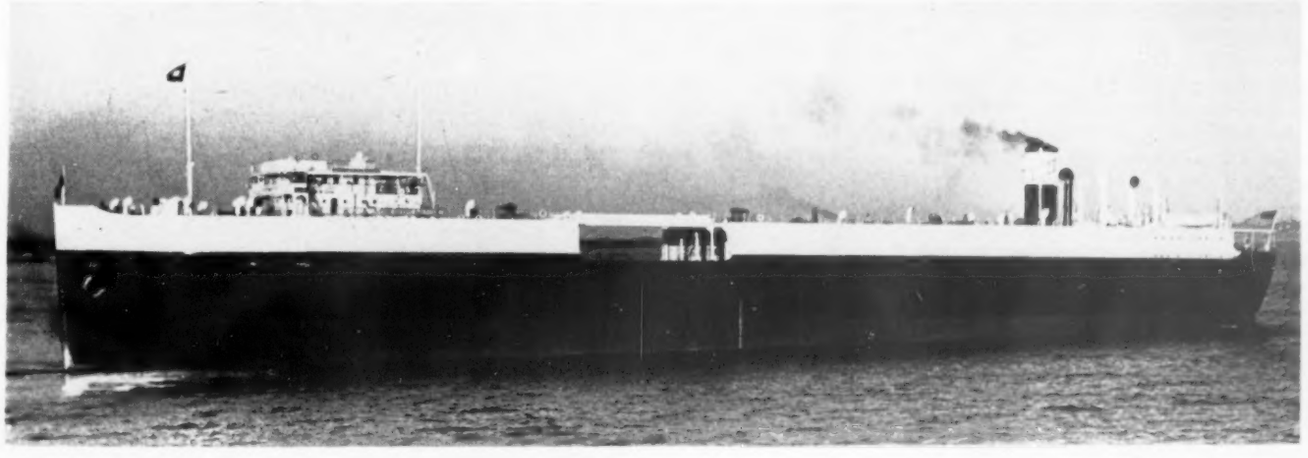


OCEAN-GOING SEATRAIN VESSELS CARRY MILE OF LOADED FREIGHT CARS

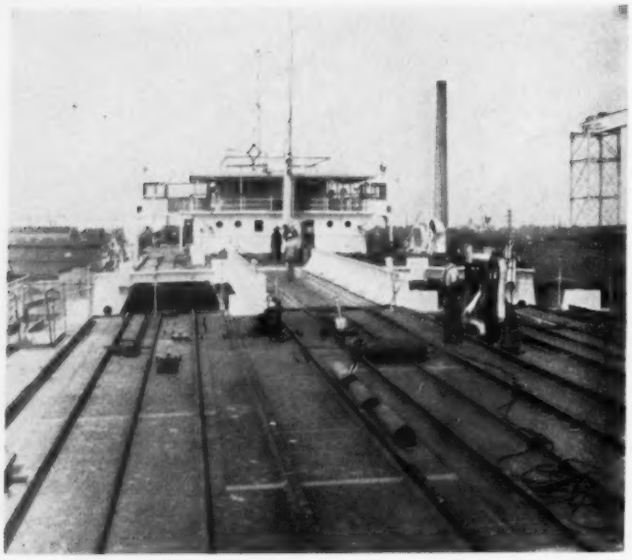
NO TRANSPORTATION event of recent years has aroused such widespread interest nor so much opposition and resentment on the part of old line, long established transportation agencies both ashore and afloat as has the placing in service in October of two new and unique American-built ocean-going freight vessels for transporting cargoes of loaded railroad freight cars. Each ship will carry 100 cars, equivalent to a mile long train.

The vessels named SEATRAIN NEW YORK and SEATRAIN HAVANA were built by the Sun Shipbuilding & Dry Dock Co., Chester, Pa., for the Seatrain Lines Inc., New York, with terminals at Hoboken, N. J., New Orleans and Havana. The SEATRAIN NEW YORK was launched Sept. 14 and sailed on her maiden voyage to Havana from the terminal at Hoboken, N. J., Oct. 6. The SEATRAIN HAVANA, launched Sept. 26, sailed from Hoboken on her initial voyage to Havana and New Orleans on Oct. 13.

Thus is inaugurated out of the nation's chief port one of the most revolutionary changes in ocean freight transportation since the replacement of sail by steam. Though this system of transportation had its inception when the first vessel of this type, the SEATRAIN NEW ORLEANS, built in England for the same owner, entered regular service between New Orleans and Havana in January, 1929, the full effect of this extraordinary method of carrying cargo



SEATRAIN NEW YORK, *one of two American-built sister ships completed recently for transporting loaded freight cars*



SUPERSTRUCTURE deck of SEATRAIN NEW YORK *looking forward showing location of rails for stowage of railroad cars. The cars are securely clamped in place*

was not so widely recognized until this invasion of the port of New York.

The United States shipping board has granted the company temporary permission to operate for a period of six months pending the board's consideration of "the effect of this operation with respect to present carriers and the development of new business." It is understood that during this period no mail compensation will be paid. The interstate commerce commission has denied the petition of nine railroads for the right to bar the interchange of freight with these ships. Consequently, this project now seems to be on the way to complete on a larger scale a successful practical demonstration of a new method of ocean transport. If successful, as the New Orleans-Havana service in operation for over 3½ years seem to leave no doubt it will be, the effect on present transportation methods is bound to be far reaching.

Vessels Larger, Faster

The new vessels are similar in line but larger and faster than the original vessel of this type. Their general characteristics are length overall, 478 feet; length between perpendiculars, 460 feet; beam molded, 63½ feet; depth molded to main deck amidships, 38 feet 3 inches; displacement, 13,745 tons; draft, 22 feet 3 inches; and deadweight, 8445 tons. They are steam turbine driven with oil burning boilers.

They are not of the carferry type, in which the cars are run from the shore rails on the vessels but are large, well proportioned vessels which have the appearance of tankers. The loaded cars are lifted from the shore rails and placed aboard the ship upon rails which are laid on four decks.

These vesseis are now maintaining a weekly service between New York, New Orleans and Havana. They are among the fastest cargo ships afloat, having a speed of 16.5 knots, and their schedule calls for arrival in Havana from New York on the morning of the fourth day and New Orleans on the sixth day. Terminal and handling facilities have been installed in Hoboken, N. J., similar to the terminals in New Orleans and Havana which have been in use since the service between the two latter ports was inaugurated in January, 1929.

One of the features of the construction of the hull is the use of special steel. The main and superstructure decks are built of copper-bearing steel and stainless steel has been used for fittings where resistance to corrosion is particularly needed. It is interesting to note that electric welding has been extensively used for securing fittings throughout the hull, and the rails are secured to the decks in the same manner. Special framing, shell and deck plating have been used in connection with the structure in way of the carloading hatch in order to maintain strength and rigidity.

The seatrain type of vessel was developed by Graham M. Brush, president of the Seatrain Lines Inc. The two new American built ships embody Mr. Brush's original ideas incorporated in the English-built ships with additional modern improvements for faster and larger ships.

Special car-lifting cradles are provided for the four tracks on each of the decks. The upper deck cradles are arranged to be watertight and serve as hatch covers.

Railroad cars are lifted from the shore tracks aboard the vessel by means of specially designed cranes which are located on the dock at the terminal. By means of these cranes the loading and unloading of freight cars from the vessel can be done at the same time. In the loading operation, the cradle, which is fitted with tracks, is placed in a gap in shore tracks and the loaded freight car is run on the cradle. The crane then lifts the cradle, with the car upon it, up over the vessel's side and lowers it into the hold, making a connection of the cradle rails with the deck rails.

Cars Shunted off Cradle

A mechanical car-handling device inside the ship shunts the car from the cradle on the deck tracks. While this cradle is still in place, a car intended for unloading from the vessel is placed upon it by the car handling device. This car is then lifted on the cradle from the hold of the ship and placed upon the dock. The car is then shunted from this cradle and another car intended for loading takes its place, and is in turn placed on the vessel.

The cars are held in place on the rails in the ship by screw jacks secured to the special jacking rails and by means of special quick-operating rail clamps. The loading crane is so arranged that it will lower the

RAILROAD car hatch of SEATRAIN NEW YORK *looking forward. The cars are hoisted through this hatch by means of a crane on shore. The car rests on a cradle brought to the respective deck levels and is then moved to position on board*

cradle over the different tracks as necessary to keep the vessel properly trimmed, and the process of loading and unloading is continued. When the four tracks on one deck have been filled, the cradles are put into place. These cradles act as hatch strong backs; each cradle has a car on it, secured in place just as the other cars are secured in place on the decks. There are no switches from one track to the other in the hold of the vessel.

Any doubt as to the practicability of handling freight cars in this way, due to the lost space in the vessel, is dispelled by the saving in handling time, the elimination of labor cost and a quick turn around of the ship which more than compensates for any loss of space.

There are certain kinds of commodities impossible to handle or transport overseas with profit by any other means, which find a definite place in the operation of these vessels.

Cars are lifted on and off the vessels at the terminals by special design cranes as shown in one of the accompanying illustrations. These cranes are electrically operated. The cranes at the New Orleans and Havana terminals are of the following description:

Cranes of Gantry Type

The main structure is supported on four legs with a clear distance between these legs of 57 feet in the direction of the pier, and at right angles to the pier the distance center to center of legs is 35 feet. The height of the tower is 104 feet. The length of trolley travel is 88 feet 6 inches. The horizontal boom is hinged near the front column so that the boom can be raised when not in use. Hoisting drums for the boom and a 40-horsepower motor are located on a rear platform of the trolley track level and the hoisting of the boom is accomplished by means of cable over sheaves at the top of the tower. The main hoisting machinery is mounted on trolley girders (spanning the main girders, which reach out over the ship) and consists of two drums each driven by 250-horsepower motors. The crane columns are made of 14-inch Carnegie beam and I beams for boom hangers. Each of these cranes contain 220 tons of structural steel.

Cranes Have Quick Lift

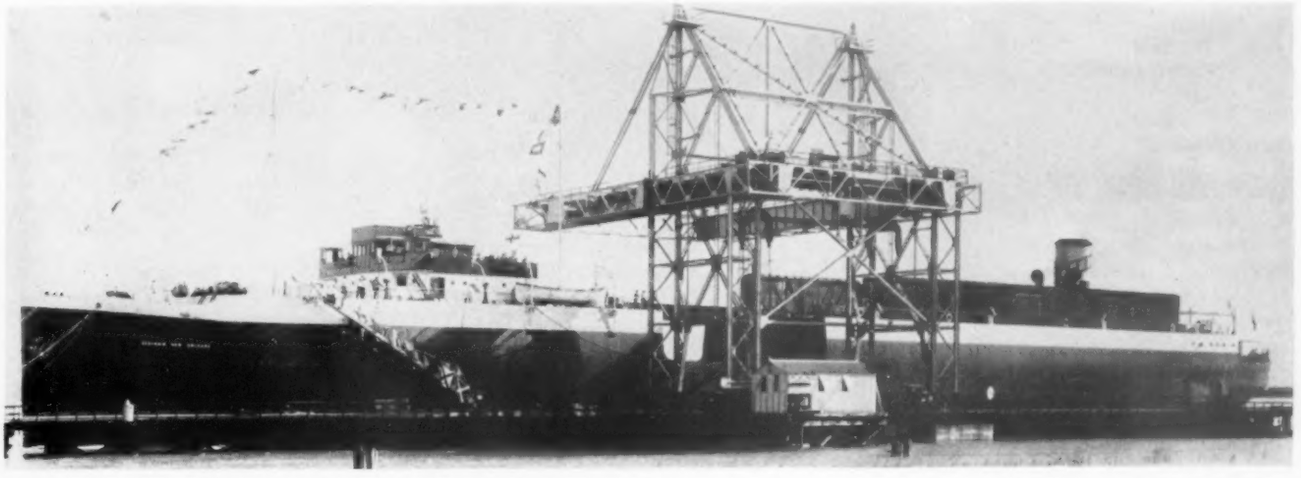
Both cranes were built by the Shaw Putnam Crane Co., Muskegon, Mich. They are electrified by General Electric Co. equipment. The controller is of the rheostat type with master switches and designed for operation from the crane cab. These cranes each have a lifting capacity of 115 tons on an extreme reach which is approximately one foot greater than the width of the ship. The cranes are designed for extremely quick operation, having a lifting speed of 50 feet per minute.

The crane for the new terminal in Hoboken has similar operating characteristics but is of modern and improved design. It was built by the Shepard Niles Crane & Hoist Corp., Montour Falls, N. Y., and has a capacity of 125 tons. The handling of cars by this method greatly reduces the time and cost of loading and discharging of cargo and therefore reduces the time these vessels have to spend in port, which is an important factor in favor of the operation of this type of cargo handling vessel as against any other type of similar capacity.

The 100 cars can be unloaded and an equal number loaded into the vessel in a period of approximately 10 hours, that is, 100 cars can be removed from the vessel and 100 other cars placed on board at an average rate of about three minutes per car.

In this new method of cargo handling, the cost of receiving, checking, weighing and handling of cargo at terminals together with the maintenance of covered terminals in the loading and discharging of the cargo is practically eliminated, thereby greatly reducing the cost from that of the ordinary piece-meal handling of cargo. These vessels can be loaded and discharged in a single working day with only a few men and if necessary with only the ship's crew, therefore saving a large amount of terminal expense and also, by reason of the quick turn around saving a good part of the vessel's operating expense. These vessels lend themselves favorably to the handling of perishable cargo.

Coastwise and nearby foreign vessels spend more than 50 per cent of their time in port for loading and discharging their cargo. The seatrain vessels are at sea 84 per cent of their time, therefore approaching tanker and ore carrier turn around speeds.



SEATRAIN NEW ORLEANS *at the New Orleans terminal. The crane lifts the cars from the dock into the ship and vice versa*

See Benefits to Railroads

Any type of cargo can be handled by these vessels. In addition to freight now being hauled by railroad, new business will be given to the railroad by these vessels, partly due to the perishable cargo above referred to, and partly due to trade from certain territories of commodities which heretofore could not be moved by the railroad because all rail rates are in general much higher than water rates.

Railroads will also benefit indirectly, in that seatrains make it economically possible to move traffic from interior points now too far from the ports to compete with other localities because of the long rail hauls. By saving in packing charges and other expenses, shippers are able to handle goods from points deeper in the interior than they can do by the ordinary steamship lines.

Fig. 1—A five-electrode electric rod heater in which the heating is controlled by application of the electric eye, one for each set of electrodes. The eyes are housed in the five vertical tubes above the machine

Applies Photocell Control To Electric Rod Heaters

ONE of the recent applications of the electric eye or photoelectric cell is that of designating desired temperatures in the heating of steel for forging, heat treating and other operations, the development applying particularly to furnaces in which the pieces of stock consisting of bars or rods are handled singly.

This type of control has just been made available on the line of Berwick rivet and rod heaters manufactured by the American Car & Foundry Co., New York. These heating machines operate on the principle of heating steel by passing electric current through it, the heat being generated by the resistance of the steel to the passage of the current. Since the first heaters were placed on the market some ten years ago, users have appealed to the manufacturer for some automatic means of temperature control.

High Precision Obtainable

There are, of course, a number of means for determining temperature, but none of these possess the precision of the electric eye. One of these is the expansion method, by which the approximate temperature is determined by the elongation of the steel during heating. A 30-foot bar heated to a temperature of 1900 degrees expands approximately 7½ inches, and it is a simple matter to construct a temperature control for this expansion, but unfortunately, most forging operations require the heating of stock only 3 to 6 inches in length. This gives an expansion of less than 3/16 inch and to measure it requires such accuracy as to make a heater of this type of control prohibitive in price.

Next, it was attempted to develop some method of measuring the input of the electric current accurately and thereby to determine the temperature. Any number of difficulties arose under these conditions and the attempt was deemed impractical.

Another solution to the problem is the timing method, in which by use of a stop watch various diameters and lengths are timed to reach the temperature desired, and then either a mechanical timing device or an electrical timing device can be used to signal or operate when this predetermined time has elapsed.

Single and Multiple Types

Fig. 3 shows a three-electrode heater equipped with a mechanical timing device consisting of a reduction motor operating friction-disks in which holes are bored and spaced for any predetermined number of seconds. A single-electrode heater with an electric definite time relay which can be set for any number of seconds and minutes is shown in Fig. 4.

In both of these heaters a piece of steel of given diameter, to be heated in a given length, is inserted between the electrodes. The stop watch is used and the time to bring the stock up to temperature is taken. The mechanical timing device or the electric definite time relay then is set for this period of time. If there are no impurities on the bar, such as scale, rust or some heavy coating of oil, the pieces will heat to the desired temperature within the period

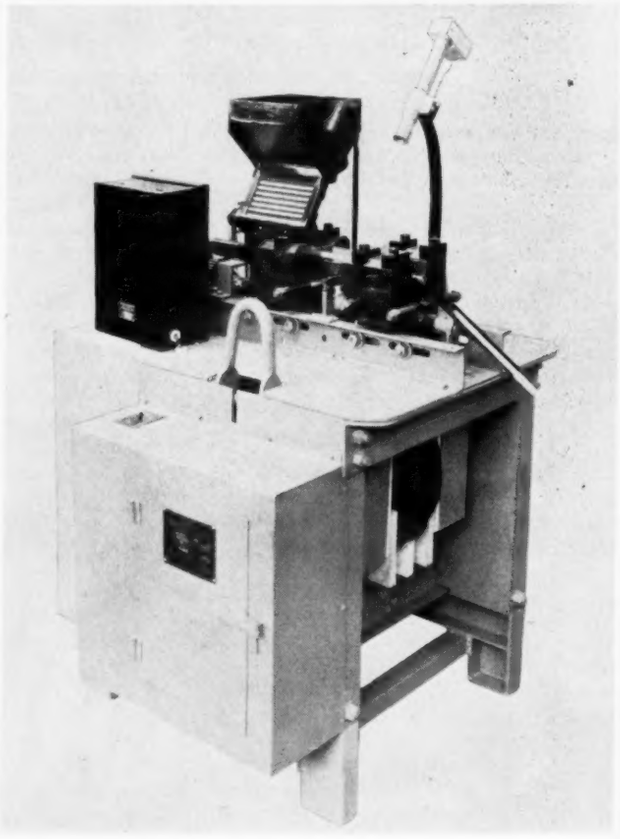
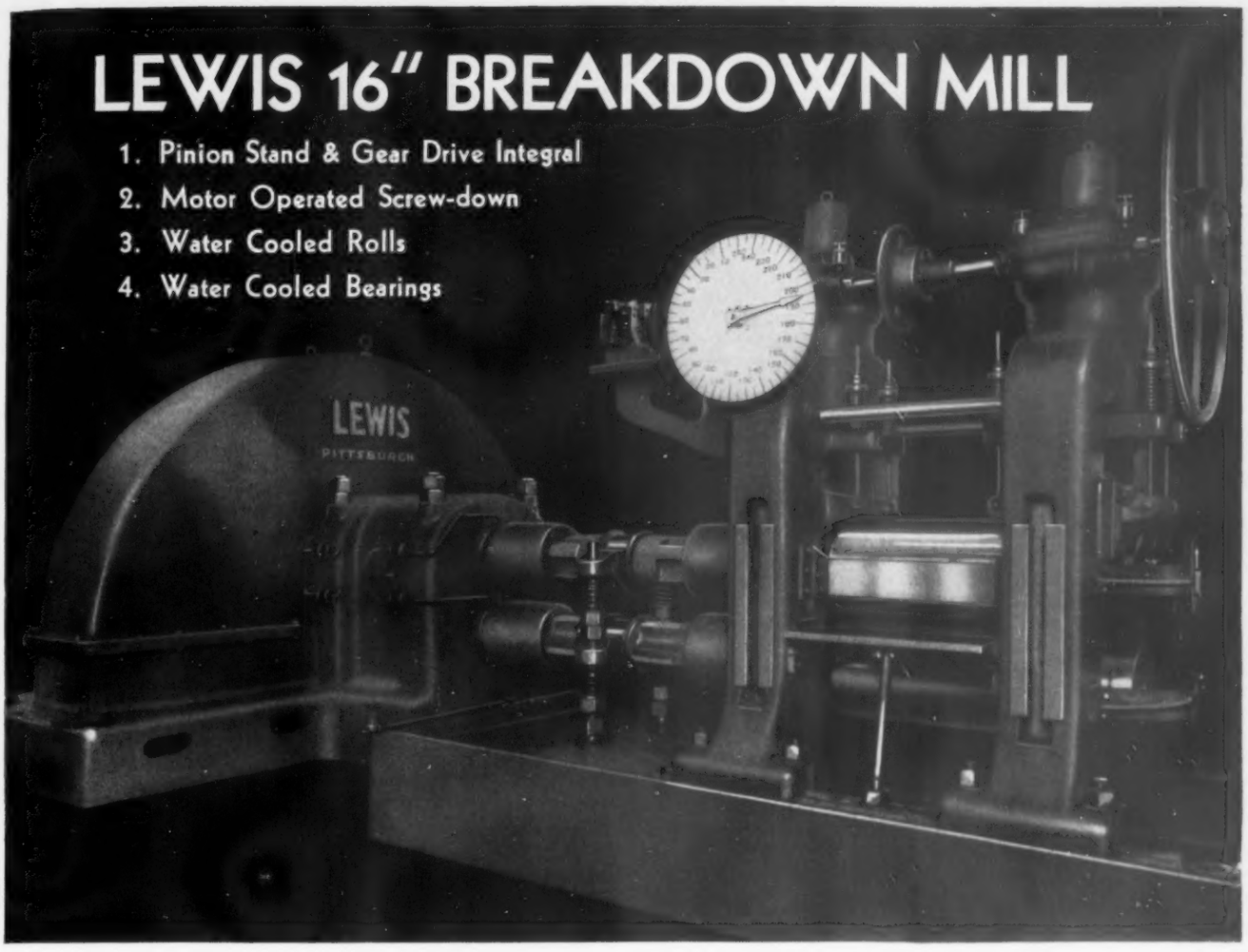


FIG. 2—This single-electrode heater is made fully automatic by the electric eye. When a rod is heated to the proper temperature, it is unclamped and ejected in the chute at the right while a new rod descends from the magazine and is clamped in the electrodes. The operator has only to keep the magazine filled



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of time set; but as scale, rust and oil affect electrical conductivity, frequently it happens that contact is not made at the instant the jaws close on the steel, although the timing device is in operation.

While the timing device thus prevents the overheating of steel, it does not insure bringing it up to the required temperature and the operator then has to manipulate the device and watch the steel closely to obtain the necessary heat and he must depend entirely upon his own eye.

This condition does not exist when using the electric eye. The piece of steel is placed between the jaws and the operator with his hand on the control dial watches until the desired temperature is reached, and then sets the eye to click at this color. It then successively clicks at this color regardless of the period of time it takes for the piece of steel to come up to the desired heat.

A five-electrode heater with the operator holding a piece of heated steel is shown in Fig. 1. In Fig. 2 is shown a single-electrode heater made fully automatic with the electric eye. This machine is provided with automatic feed and automatic kick-out and the only attention required for operation is to keep the magazine filled with stock. It will heat steel from ⅜ to 1-inch diameter and in lengths up to 12 inches.

Eight or more different sizes and types of this heater will be built to suit various service conditions. At present, the company's standard line of machines accommodates the heating of any size stock from ¼ to 2-inch diameter and in any length from 1 up to 24 inches. Sizes other than these can be heated with specially-built equipment.

The electric eye designates temperature through the changing light values in the process of heating; its simplest description is to call it a "color selector." It can be arranged to operate on any color during the process of heating from the moment color first appears until it reaches the melting point.

In reality, the electric eye equipment resembles a radio receiving set in which the eye is the detector tube. In conjunction with the eye is used an amplifying tube. Adjustments to cause the eye to operate on different colors are obtained through a dial controlling resistance. The tubes, according to the manufacturers, have a life of approximately two years and cost about the same as radio tubes.

Relay in Separate Cabinet

The photoelectric relay comprises the eye or photoelectric cell in a housing provided with an optical system; a control cabinet containing an amplifier, an electric relay, and the control knob for setting for various temperatures. The photoelectric cell housing may be placed in the most advantageous position for sighting the metal and at any distance from the control cabinet. In the design and application of this equipment to its electric heating machines, the American Car & Foundry Co. was assisted by the Electrotec Engineering Corp., New York.

By the resistance method, the eye operates a relay which in turn operates the mechanical movements of the electrode. The jaws open when the steel is heated to the desired temperature, and the operator is informed either by a red light or by the ringing of a bell that the piece is ready for forging. However, should the operator not be ready to use the piece and it cools, all that is necessary is to push a button, close the electrodes and bring the piece up to the desired heat, when the eye again will release the electrodes, thereby assuring that with 10 degrees Fahr. plus or minus every piece will be brought to the same temperature.

For certain operations and for certain metals, it is important that heating not go above 900 degrees Fahr., which is approximately the point where metal shows light. For this heating, determination of the temperature by measuring the heat waves will be of great assistance.

For heating operations such as are described in this article, much dependence previously has been placed upon the human eye to determine the proper temperature of the steel. The electric eye, however, has an important advantage over the human eye, in that it does not tire or become partially blind by looking at hot metal constantly. Experience so far has shown that it will determine temperature in most all instances within plus or minus 10 degrees.

Stainless Steel Meeting To Be Held in Cincinnati

A joint meeting of the Engineers club and Cincinnati chapters of the American Institute of Architects and

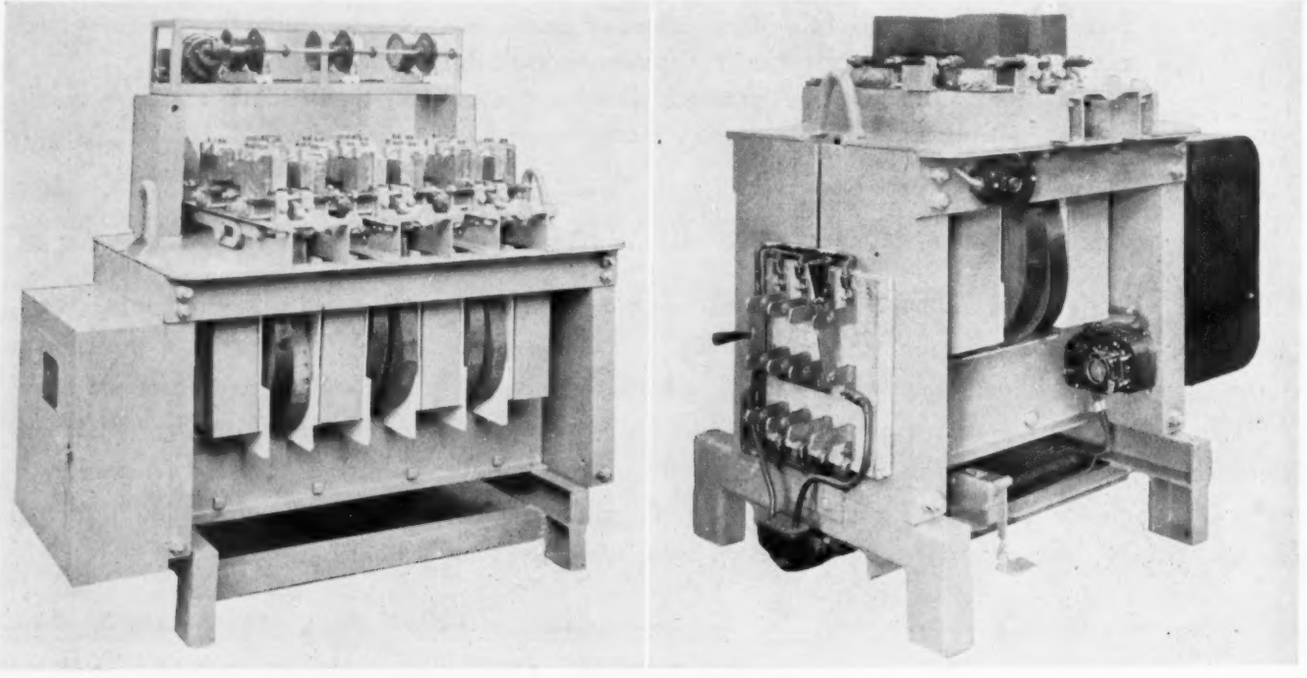

Fig. 3—(Left)—A mechanical timing device operated by motor and friction disks controls the heating time of a three-electrode machine. Fig. 4 (Right)—This single-electrode heater has its heating period controlled by an electric definite-time relay

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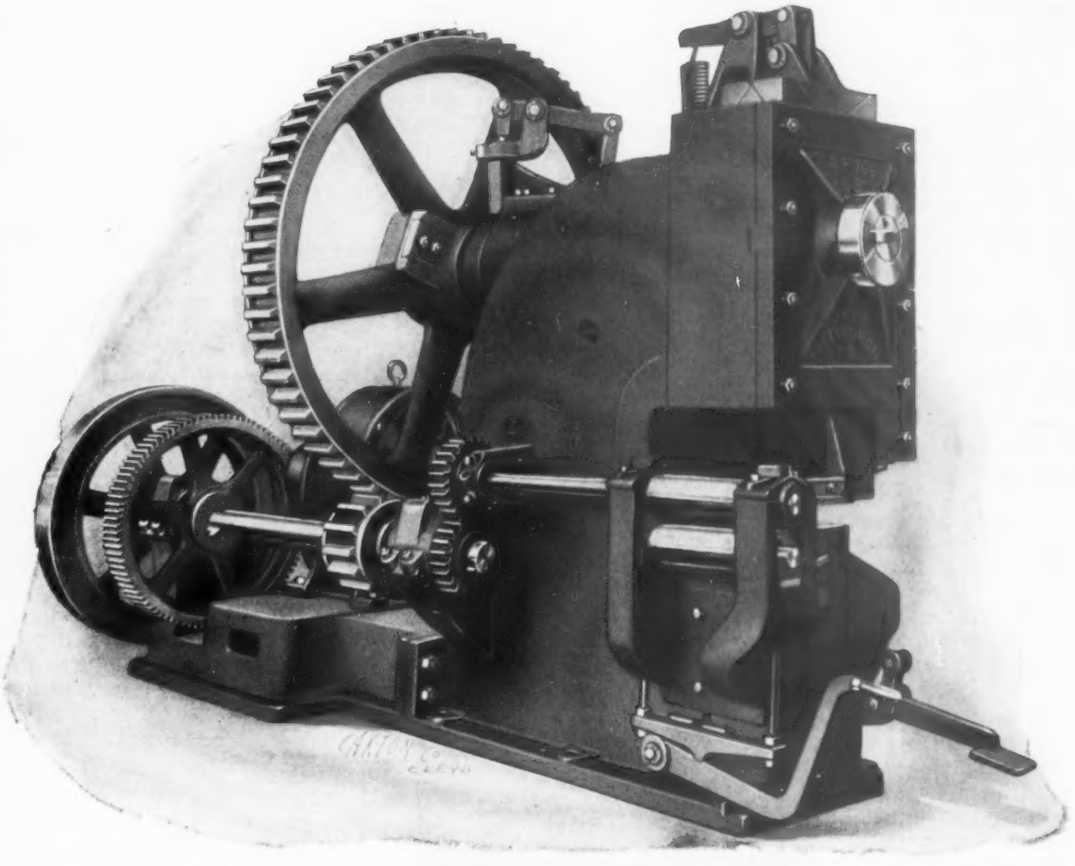

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American Society for Steel Treating will be held in Cincinnati, Nov. 10, with stainless steel as the topic for discussion. The meeting will be in the auditorium of the Union Gas & Electric Co. at 7:30 p.m.

Two speakers willl appear on the program. Dr. Marcus A. Grossman, research engineer, Illinois Steel Co., Chicago, will discuss "Development of Stainless Steels and the Present State of the Art;" and D. T. Haddock, consulting engineer, American Sheet & Tin Plate Co., Pittsburgh, will present a paper on "Stainless Steel—Available Uses and Applications."

A special feature of the meeting will be a generous exhibit of stainless steel products in classified displays of the stainless steel industry. This exhibit, which will open at 10:30 a.m., will stress the range of application and methods of processing, construction and joinery of these materials and their embellishment.

Develops New Flux for Soldering Sheet Steel

A new type of soldering flux known as "Flosol Cream" has been developed by the American Chemical Paint Co., Ambler, Pa. This flux, designed for soldering sheet steel, where prevention of rust is of vital importance, is a white creamy chemical which is brushed on like paint. The coating dries in from 10 to 15 minutes and the surface can be tinned and soldered either before or after the coating dries.

It is shipped in standard 12-pound cans and 60-pound pails and, in addition to steel, is said to flux most of the commonly used metals except aluminum and its alloys. The nature of the material is such that a thin film is applied to the surface and it remains there, for the film neither runs nor spreads when heated. The little residue remaining after soldering is confined to a restricted area, from which it can be removed easily with a wet cloth or with the company's Deoxidine to prevent rusting.

Among the advantages claimed by the manufacturer are: Perfect fluxing, low cost, cleanliness, ease of application and removal, absence of corrosive fumes, limited spread and absence of pits in the solder with flux entrapped in them.

A.S.T.M. Group Committee Meetings in New York

American Society for Testing Materials has reached a decision to hold its 1933 group meeting of committees in New York during the week of March 6, since the regional meeting is to be held there March 8. Selection of the East for these meetings was influenced by the fact that the annual meeting in 1933 is to be held in Chicago, June 26-30.

The regional meeting will be a symposium on motor lubricants.

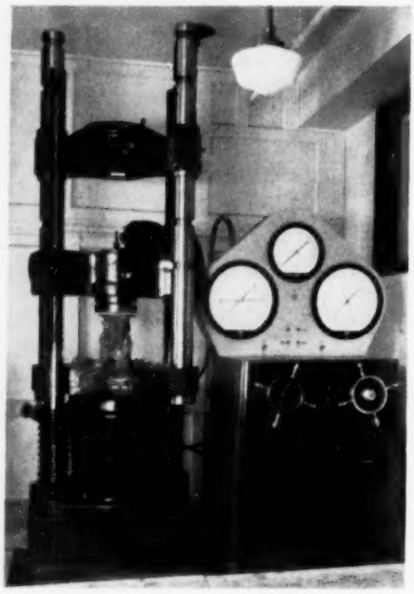
Shows Effect of Ageing On Zinc Die Castings

In a 24-page profusely illustrated booklet on zinc die castings just published by the New Jersey Zinc Co., 160 Front street, New York, is presented for the first time charts and a table showing the effect of ageing treatments on tensile strength, impact strength and dimensions of the company's zinc alloys.

Heat treatment for stabilizing the dimensions and properties of a zinc die casting alloy is given and discussed. Other subjects considered include: Permanent sharpness of dies, inserts, soldering and welding, estimates, machining and finishing. A large two-page illustration show a silhouette of an automobile with the parts commonly made of zinc die castings and rolled zinc contrasted in white.

It is stated that improvements in casting processes and a better knowledge of the potentialities of the zinc alloys have all aided in the production of die castings of both greater and thinner cross section, and of greater strengths which have made die castings available for mechanical performances hitherto deemed inadvisable.

Ten pages are devoted to illustrations of a wide range of zinc die castings used in various industries.



TESTING MACHINE ATOP SKYSCRAPER: Steadily in service crushing concrete test cylinders up to capacity this 200,000-pound universal testing machine built by Baldwin-Southwark Corp., Philadelphia, is installed on the twenty-first floor of the Municipal building, New York, being operated by one of the municipal departments of the city. The machine is adaptable for either tension or compression tests and is equipped with the Emery hydraulic capsule, fully enclosed machinery cabinet and instrument board mounted above. Two 16-inch and one 12-inch dials are provided; table is linoleum covered. Installation of a machine of this size so high up in a building is unusual but its operation has caused no damage to the structure or annoyance to occupants of offices below.

Power Exposition Attracts Many Exhibitors

Two hundred and ninety-three manufacturers of power producing machinery, mechanical devices for power transmission, precision instruments for the control of combustion, pressure, volume, flow and other measurable entity, material handling equipment, heavy electrical machinery, etc., will stage exhibits in the forthcoming Tenth National Exposition of Power and Mechanical Engineering at the Grand Central Palace, New York, during the week Dec. 5-10. This is coincident with the annual meeting of the American Society of Mechanical Engineers in New York. The exposition is being conducted by the International Exposition Co., Charles F. Roth and Fred W. Payne, co-managers, with offices at Grand Central Palace.

Advocates Stainless Steel For Dyeing Industry

Use of stainless steel in the dyeing industry is discussed briefly in a bulletin just issued by the Electro Metallurgical Co., 30 East Forty-second street, New York. It is reported that as a result of some 6000 tests 18-8 austenitic steel, containing about 18 per cent chromium and 8 per cent nickel, is by far the best material for dyeing equipment.

Practical experience with a large number of dyeing machines operating with many different kinds of dyes are said to have confirmed laboratory results.

Spring Maker Installs Anthracite Gas Producer

Athenia Steel Co., Clifton, N. J., manufacturer of steel springs, has installed an anthracite gas producer furnished by the Dover Boiler Works, Dover, N. J. The anthacite gas will be used in the company's annealing and tempering furnaces.

Investigates Ternary Alloys For Deoxidizing Steel

REPORTS on theoretical metallurgy and results of investigations of the influence of nonmetallic inclusions on the physical properties of steel, presented at the sixth annual meeting of the Metallurgical Advisory board to the Carnegie Institute of Technology, Pittsburgh, Oct. 28, disclosed marked progress. Attendance of over 500 metallurgists, steelworks and rolling mill superintendents and other officials identified with the steel industry typified the interest in the research work being undertaken by the board. The conference was held jointly with the iron and steel division of the American Institute of Mining and Metallurgical Engineers.

Investigations described at the morning session included progress reports on alloys of iron, manganese and carbon and on chromium-nickel alloys; and a paper dealing with the segregation of ferrite and cementite from austenite. At the afternoon session, devoted to reports on the investigation of the physical chemistry of basic steelmaking, Dr. C. H. Herty Jr., reviewed the work accomplished in deoxidizing steel with manganese, aluminum, silicon alloys.

Ternary Alloy Is Planned

The speaker related that various triple alloys of manganese, silicon and aluminum and three alloys of manganese, silicon and zirconium are being used in the deoxidation of low-carbon steels. The purpose of this work, he explained, is to develop a ternary alloy which will make it possible to deoxidize steel in the furnace to a greater degree than is at present possible with manganese and silicon, or with manganese-silicon alloys; and to work toward a ladle deoxidizer for processes where furnace deoxidation is impractical. Dr. Herty pointed out that definite results will not be available until about Dec. 1 on account of the large amount of work involved in counting the inclusions and in electrolyzing.

Results of the past three years' work on deoxidation with manganese-silicon alloys and the conclusions reached in this work were summarized as follows:

Determination of steel cleanliness by the electrolytic method, the Epstein rating, metallographic examination, and inspection of axle steels for internal seams, shows that as the silicon, added as manganese-silicon alloy, increases up to 0.10 per cent silicon, the steel becomes cleaner. When this amount of silicon is added there is little or no tendency for the FeO to build up in the metal if the heat is tapped as indicated later.

If high-silicon spiegel is used for deoxidation, ferromanganese should be added not later than 10 minutes after the alloy addition. The heat should be tapped in less than 20 minutes after the alloy addition to prevent any chance of deoxidation from the slag. With the more concentrated alloys, silicospiegel and silicomanganese, the deoxidizing action is much more rapid because these alloys have such a low melting point, and the heat should be tapped in less than 15 minutes, as the shorter the time between the addition and tap the lower the iron oxide content of the metal. The cleaning action with these concentrated alloys is rapid.

If high-carbon heats can be tapped in 15 minutes or less the viscosity of the slag can be allowed to vary over a wide range. However, if it is necessary to keep the heat in the furnace for 15 to 25 minutes while waiting for a carbon analysis, the slag should be kept heavy throughout the deoxidizing period. If longer than 25 minutes is required for a carbon analysis, the manganese-silicon alloy practice becomes much less valuable. On low-carbon heats it is essential to tap the heats in 15 minutes or less and to carry a creamy to heavy slag because slags on low-carbon heats are much more oxidizing than on high-carbon heats.

In order to tap the heat in a short time there should be available a rapid method for determining carbon or a floor laboratory where results may be obtained. Furthermore, the utmost precaution should be taken against slow and hard taps, as these conditions may ruin a well-deoxidized heat. It is extremely important to be able to tap the heat when desired and to have a good fast tap.

Keep FeO Low in Slag

Inasmuch as the iron oxide in the metal is proportional to the iron oxide in the slag at a given carbon content, it is important that the iron oxide in the slag be kept at the lowest figure consistent with speed of operation and phosphorus elimination.

When high-silicon spiegel is used for deoxidation, the carbon efficiency is about 70 per cent, including any coal used in the ladle.

The manganese efficiency increases as the amount of silicon added is increased. With a silicon addition of 0.10 to 0.11 per cent, the manganese efficiency is about 80 per cent when the heats are tapped in 18 to 23 minutes. A shorter time between deoxidation and tap increases the manganese efficiency.

From 0.006 to 0.012 per cent phosphorus reverts to the metal as the silicon addition increases from 0.07 to 0.11 per cent.

About 0.003 per cent sulphur is eliminated by the fluxing action of the fluid manganese silicates formed on deoxidation.

In explaining the use of manganese-silicon alloys in the open-hearth process, Dr. Herty emphasized that an alloy composed of 20 per cent manganese and 4 per cent silicon gave the most effective results in the way of a cleaner steel. In commenting on this report, W. H. Ballantyne, superintendent of open-hearth and bessemer departments, Jones & Laughlin Steel Corp., Pittsburgh, stated that if a concentrated alloy, say 13 per cent silicon and 65 per cent manganese is added, there would be used 69 per cent less weight of alloy carrying 38 per cent less carbon and only 22 per cent of other elements instead of 74 per cent. The specifications, therefore, could be met with less difficulty.

When working with the concentrated alloy, the speaker mentioned, it has been found that burned lime added to the heat when melted and charging hard enough so ore can be added, gives the best results in obtaining the slag that has the proper viscosity.

Rejections Show Decline

The most noticeable effect of the use of manganese-silicon alloys, and probably the most important, is the reduction of open-hearth rejections, commented W. J. Reagan, open-hearth department, Edgewater Steel Co., Oakmont, Pa. A second advantage, he pointed out, from the use of manganese-silicon alloys, is the reduction in cost of final deoxidizers, by reducing the amount of ferromanganese in the final addition, and sometimes a slight reduction in the amount of 50 per cent ferrosilicon used as a ladle deoxidizer. A third noticeable effect of the use of these alloys, the speaker mentioned, is the noticeable increase of heats in grade.

Classifying our scrap into various reasons, such as cracks, dirt, blowy, etc., stated the speaker, disclosed that the use of high-silicon alloys apparently makes the steel less susceptible to rejections for nearly all causes. Instead of finding a decrease in rejections for one reason only, he stated, we find the decreased proportion over all reasons.

In conclusion, Mr. Reagan emphasized that the use of manganese-silicon alloys in the open hearth presents no difficulties. He disclosed, however, that a slag heavier than normal tends to give a kick back in phosphorus. "We have never had a phosphorus higher than 0.035 per cent," he stated, "compared to a normal of 0.018

It's hard for a Hungry citizen to be a Good CITIZEN

THE boy whose stomach is empty cannot be expected to do good work at school. Babies undernourished through another winter may be handicapped by frail bodies through life. The hungry father of a hungry family is hardly the man to seek employment with persistence, or to do well on the job when he gets it.

Before you can save a man's soul it is often necessary to feed his body. You have no right to expect the civic virtues of patience, courage and honesty from starving, freezing men and women. If they preserve a just attitude towards the laws of the city in which they live, it is a miracle.

This winter, as never before, it is the duty of all who are well-clad, well-housed, and well-fed to help the less fortunate. The fact that you gave last year, and the year before, does not lessen your responsibility. The fact that you cannot afford a large contribution must not deter you. The upturn of business with a gradual improvement of economic conditions does not remove the crisis of this moment. Emergency appropriations by the federal government amount to $300,000,000, but they meet only half the increased national needs for human relief.

The rest is up to you!

How will your dollars be used? First of all, they will feed the hungry, and relieve the absolute want of the unemployed.

They will be used, also, to take care of the sick and aged. They will help to maintain hospitals, orphanages and schools. They will make possible clinics and visiting nurses.

The dollars you give are invested in the forces of civilization right in your community!

WELFARE AND RELIEF MOBILIZATION, 1932

The Welfare and relief Mobilization for 1932 is a cooperative national program to reinforce local fund-raising for human welfare and relief needs. No national fund is being raised: each community is making provisions for its own people; each community will have full control of the money it obtains.

Give through your established welfare and relief organizations, through your community chest, or through your local emergency relief committee.

Newton D. Baker, Chairman, National Citizens' Committee

This winter, as never before, support your local Community Campaign

to 0.020 and we have had but few this high."

In discussing the effect of deoxidation and furnace manipulation on the physical properties of steel with particular reference to impact testing, M. W. Lightner, research engineer, presented the following conclusions:

All other variables being the same, the amount of ferrite which transforms from austenite is the major factor in determining the impact strength of normalized steels. The impact resistance of steel is increased by an increase in the percentage of manganese in solid solution in the ferrite. In steels containing over 0.20 per cent carbon, the shock resistance is lowered by increasing the phosphorus content. An excessive amount of coarse banding not only lowers the impact, but causes check results to be more erratic. Slight fine and medium fine banding apparently have no effect.

Inclusions do not affect the dynamic properties of normalized steels unless there is an excessive amount of segregation, especially of alumina or aluminum silicate, directly under the notch. This same condition causes nonuniformity of check results.

Effect of Grain Size

Within the limits of grain size studied in this investigation, an increase in grain size does not lower the impact resistance, provided the other variables are the same. However, for any particular steel, the larger the grains the less ferrite will be formed upon normalizing and the impact will be lowered in proportion to the decrease in the amount of ferrite. The previously mentioned variables can be controlled by proper furnace manipulation and complete and effective deoxidation.

From the results of this investigation it is possible to calculate the impact value of plain carbon normalized steels closely, provided the ferrite content and the steel analysis is given and there is neither banding nor excessive streaks of nonmetallic matter in the steel. It would appear that this method of determining the variables affecting impact strength should be particularly applicable to the study of alloy steels when they are used in the ferrite condition.

The second part of the discussion dealing with the effect of deoxidation and furnace manipulation on the physical properties of steel with particular reference to age hardening was related by Dr. Herty. The object of this investigation is to determine the factors affecting the age hardening of steel where both quench ageing and strain ageing are included in the term age, that is, "age hardening" and further, to determine the effect of deoxidation and furnace manipulation on the various factors involved.

The preliminary results show that rimmed steels age rapidly and increase about 20 Rockwell units after quenching. As the carbon content of the steel increases, he stated, the amount of ageing decreases. In killed steels the amount of ageing decreases as the carbon increases but there is far less ageing in the killed steels than in the rimmed steels, and aluminum killed steels show less ageing than silicon killed steels. A sample of Izett steel showed about the same degree of quench ageing as similar aluminum killed steels made at various plants in the Pittsburgh and neighboring districts.

Variation in Semikilled Steels

Semikilled steels, that is, steels partially killed in the furnace or ladle and capped in the molds, showed a wide range of ageing values, some ageing as rapidly as rimmed steels and others as slowly as killed steels. These general results, he asserted, indicate that both carbon and oxygen have a pronounced effect on the quench ageing of steel. The nitrogen content of all the steels was 0.009 per cent or lower, averaging 0.006 per cent, and there was no indication of any correlation between degree of ageing and nitrogen content. This was probably due to the generally low nitrogen contents of the steels under test. In the strain ageing experiments, these same steels are being subjected to various degrees of compression followed by impact testing.

On account of the large amount of machine work involved in this phase, data are being accumulated much more slowly. Plans are under way for making a series of low-carbon killed steels in open-hearth furnaces where the extent of deoxidation with aluminum will be varied to a greater degree than in ordinary steelmaking practice. Results should be available on the strain ageing work at the time of the next progress report, he concluded.

Dr. Thomas S. Baker, president, Carnegie Institute of Technology, Pittsburgh, presided at the annual dinner in Hotel Schenley in the evening at which J. H. VanDeventer, editor, the *Iron Age*, New York, was the principal speaker.

Develops Synthetic Liquid Insulator

A NEW synthetic liquid insulator, recently announced by the General Electric Co., Schenectady, N. Y., is claimed to have the advantages of mineral oil as an insulating and cooling medium for electric equipment as well as being noninflamable and nonexplosive. Designated by the trade name Pyranol, the material is produced in different forms for different purposes, all being synthetic organic dielectrics of varying physical and electrical properties and all having a high dielectric constant.

For economic reasons, mineral oil probably will remain in general use for years, according to General Electric engineers, but commercial installations of the new liquid indicate numerous applications where it is especially valuable. Capacitors can be made physically smaller per microfarad, with increased reliability, it is said; and the higher cost of transformers with the new insulator is justified when the equipment must be completely proof against fire and explosion hazards. Since the liquid is a solvent for some materials ordinarily used in electric equipment, particularly transformers, the apparatus must be designed especially for its use.

Dielectric constant (specific inductive capacity) is practically that of solid insulations, and dielectric strength is equal to that of mineral oil. The liquid is chemically stable and resists oxidation, so that there is no sludging after continued exposure to heat or air. It demulsifies, or separates from water, more than twice as rapidly as does mineral oil; and the moisture rises to the surface, from which it may be evaporated. Viscosity and freezing point can be varied to suit conditions without affecting other qualities of the liquid.

When the fluid is subjected to an electric arc, the principal product is hydrogen chloride, an irritating but not actively poisonous gas which can be removed by an absorption device or piped to the open air for dissipation.

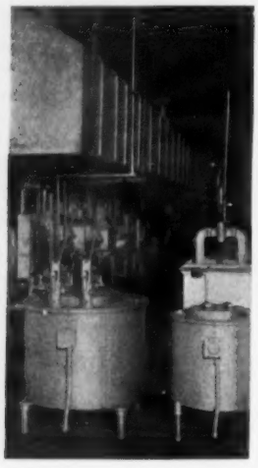
Wrought Iron Committee Plans More Active Work

As one portion of its program during the coming year, American Society for Testing Materials committee A-2 on wrought iron will prepare a standard specification for wrought iron rivets. Several industries have decried the lack of definite standards for this type.

The subcommittee on plates and shapes is to be reorganized and will be called upon to revise the specifications for plates and probably to prepare a specification for sheets and shapes of wrought iron. Progress has been made by the research group which is preparing a report on what constitutes quality in wrought iron. There is a lack of authoritative published information on this subject, a situation which it is hoped can be remedied insofar as possible.

At a recent meeting of the committee the following officers were elected for a term of two years: Chairman: H. W. Faus, engineer of tests, New York Central Lines; vice chairman, James Aston, head of department of mining and metallurgy, Carnegie Institute of Technology; and secretary, G. H. Woodroffe, metallurgical engineer, Reading Iron Co.

Making the Most of



METHODS AND MATERIALS

RESEARCH experts at a Western university have invented and constructed X-ray stereofluoroscopes which will give stereoscope images in three dimensional, plastic relief. There is no other stereoscopic method by which this perception of localization in depth can be effected satisfactorily. If it is useful for the purpose in hand, the three-dimensional image can be put in front of the fluorescent screen and formed as a "life-sized ghost" into which calipers can be inserted so that direct measurements can be made with a precision of less than a millimeter. In addition to this, the stereofluoroscope is useful anywhere the ordinary X-ray fluoroscope can be used.

S S S

Chromium plating on the top surface of cutting tools very much reduces the tendency for metal to stick on the tool. Such tools, however, as are resharpened by grinding on the top surface would need to be replated after each grinding. This involves a procedure which most machine shops are unwilling to contend with. On the other hand, where tools are resharpened on their front surfaces, one good job of chromium plating should last for many resharpenings of the tools.

S S S

Thermosetting or baking lacquers are the latest development in the finishing field. They must be subjected to heat to be cured. In fact, they are related closely to the plastic molded bakelite products and may be looked upon as liquid forms of these materials. Baking lacquers do not become brittle with age and they do not break and check or crack when turned on sharp edges. As a rule they are baked either at 200 degrees Fahr. for 3 hours or at 300 degrees for 20 minutes. They contain no oil so cannot be classified as varnishes, are unaffected by organic solvents, and must be applied in one coat only. The spray method of application is at present the only way of handling this coating material.

S S S

Liquid quenching of alloy steel castings, particularly in the low carbon range is capable of increasing by 50 per cent the ultimate strength and yield point characteristics above those obtainable in the metal in the normalized condition.

S S S

Heat-resisting irons containing 5 to 7 per cent silicon have been developed in Great Britain, which oxidize only slightly on the surface and show a growth of 5 per cent or less after heating for 7½ hours at 1832 degrees Fahr. A further development of that material containing in addition to the high silicon, 17 per cent nickel and 3 per cent chromium, had an untarnished surface and a growth of 1.3 per cent under the same conditions.

SEVERAL airplane manufacturers are considering using stainless steel for wings and other members of large planes. This is because in larger planes, with the necessity for larger and wider wings, the ratio of strength to weight is in favor of stainless steel as compared with light-weight, nonferrous metal alloys. Incidentally, pontoons on hydroplanes now are being fabricated to an increasing extent from stainless steel.

S S S

By use of an oxyacetylene blowpipe, an aircraft manufacturer completely rebabbitted the four bearings of a large forming press in less than a day. The press was lined up with blocks and one bearing at a time was worked on. The bearings were similar to longitudinally cut away sections of a casing set around each pillar or guide post at the corners, consequently a blowpipe with long heating head was used, permitting the welder to carry the flame to any point of the bearing by bending the head. The babbitt in each bearing was melted out quickly. While the shafts and bearings were still hot, a clay mold was built around the outer half of each shaft and across to each side of the bearings so that a mold was formed which would permit babbitt to be run directly into place. The new babbitt then was poured around the shaft.

S S S

Small additions of alloys to gray iron, such as 0.15 to 0.50 per cent nickel with 0.15 to 0.30 per cent chromium, are being used to retard deterioration from growth, heat and corrosion in hot zones of gas lines and manifolds used in paper mills where combustion of sulphur forms sulphur dioxide.

S S S

By devoting a few minutes each day to going over projects which were dropped or held in abeyance after the crash in 1929, the chief engineer of one company is anticipating the call to action when business recovery gets under way. Already he has found two projects which are likely to be revived. He is familiarizing himself with their details so that if and when he receives word to go ahead on them, he will be prepared to act promptly.

S S S

Scratching was encountered when the surfaces of cast aluminum spirit levels were finished by disk grinding. The surfaces had to be unusually smooth, such as in any precision instrument, therefore, it was necessary to add two rough polishing operations and a finish stoning operation. Finishing these levels by tungsten carbide milling has eliminated the two rough polishing operations. Likewise, the usual heat caused by polishing was eliminated so that the surfaces do not warp as they did previously. This in turn eliminated a straightening operation. The present feed for tungsten carbide milling is 100 inches per minute with the cutters operating at 1000 revolutions per minute and the milled surface is unusually smooth, making necessary only a very slight stoning operation to produce an unusual polished-like surface.

WELLMAN Solves Another Problem

Wellman engineering and construction made the mooring and docking of the world's largest airship, U. S. S. Akron, a simple, dependable, and economical operation.

What are your handling problems?

State your objective and Wellman will design and build machinery which will cut time and cost.

Unusual equipment is Wellman's forte!

Telescopic Mooring Mast ..... at LAKEHURST

Now building a duplicate of this Telescopic Mooring Mast for the U. S. S. Macon's dock on the Pacific coast.

THE WELLMAN ENGINEERING CO.

ENGINEERS CONSTRUCTORS MANUFACTURERS

CLEVELAND, OHIO

WELLMAN

BIRMINGHAM • NEW YORK • MEXICO

Table XII

Details of Structural Steel Used in Open-Hearth Bottoms

Figure No.	Loading	Furnace	As Built: Shape	Section modulus	Maximum moment	Maximum fiber stress	Maximum shear	As Recommended: Shape	Section modulus	Maximum fiber stress	Maximum shear
12	a	G	*IB, 24″ 100-lb.	197.65	2,430,000	12,300	1675	†BG, 24″ 120-lb.	300.65	8100	2360
13	a	O	†BG, 30″ 190-lb.	585.52	1,285,000	2,200	1500	†BG, 18″ 80-lb.	154.44	8300	4250
14	b	L	*IB, 18″ 75-lb.	126.87	754,000	5,950	2300	No Change			
15	b	M	*IB, 12″ 40-lb.	44.82	180,000	4,020	1600	Larger Beam Should Be Used			
16	c	J	*IB, 24″ 100-lb.	197.65	860,000	4,350	1115	*IB, 18″ 70-lb.	101.94	8430	1560

*I-beam.
†Bethlehem girder.

IMPROVING OPEN-HEARTH FURNACE DESIGN

By WILLIAM C. BUELL JR.

Part I Bottoms

(Sixth Article of Series)

STEEL grillage of the hearth bottom, as shown in Table XII, has been calculated from the steel specified on the various reference drawings, to an area 20 x 20 feet, and then reduced to a square foot basis. The outside girders, which support the front and back walls, buckstays and the roof, are considered in a later chapter. Only effects on the interior steel between outside girders are considered.

The weight of the refractory bottoms are calculated from the data presented in Table III, as at both center lines of the furnaces, it being assummed that the average refractory weighs 150 pounds per cubic foot. The weight of the metal bath is taken as 430 pounds per cubic foot and the slag as 120 pounds per cubic foot. The maximum depth of the bath is taken to show the greatest loading over the bath area. The grillage system is customarily riveted together.

In Table XIII the items of steel are listed from top to bottom. Examination of the data shows most conclusively that anything approaching unanimity of opinion among furnace designers as to proper bottom structure is unknown. Visual examination of Fig. 1 will show that in all cases the bottoms primarily are supported on girders extending parallel to the longitudinal center line of the furnace. In turn, the girders variously are carried on steel bents or concrete piers which distribute the loads to appropriate footings.

The loading of the bottom supporting structure excepting bottom E falls into three classes, as follows:

a. Simple girder, two supports, with overhanging ends. Found in furnaces A, C, G, H, I, N and O.

b. Continuous girder, four supports.

with two overhanging ends. Found in furnaces D, F, K, L and M.

c. Continuous girder, four supports, with two of the supports at the extreme ends. Found in furnace J.

In all cases, girders are supported on the substructure, but are not considered as fixed thereto, and all ends are free, except in the case of bottom J. All girders are considered as being fixed against any lateral movement.

In calculating the girder system it is assumed that the upper cross beams, plate pan bottom or channels laid flat do not exert any vertical strengthening effect. While to a greater or lesser extent this is probably incorrect, any strengthening effects produced therefrom are erratic and cannot readily be calculated. Therefore, the strengthening effect, if any, can be considered as an added factor of safety.

For the purpose of determining the extent to which the girders are stressed in existing construction, two bottoms of the "a" group, G and O; two of the "b" group, L and M; and, the bottom J of the "c" classification have been selected as representing the minimum and maximum limits shown in the various designs.

(To be continued)

Shows Stainless Applications

Crucible Steel Co., of America, 405 Lexington avenue, New York, has prepared an attractive 12-page bulletin illustrating pictorially a number of the uses of its stainless steels, particularly in the form of polished sheets. Applications cited in the bulletin are confined to the architectural, culinary and institutional fields and the dairy industry.

The stainless steel referred to in the bulletin is of the KA-2 type, containing 18 per cent chromium and 8 per cent nickel, and is marketed by the company under the name of Rezistal.

Table XIII

Details and Data of Steel Used for Bottom Construction

	Total weight, lbs. in 400 sq. ft.	Weight per sq. ft.
FURNACE A		
Plate, ¾-inch	12,000	
I-beams, 15-inch, 42-pound at 17 inch centers	11,480	
I-beams, 24-inch, 80-pound at 20 inch centers	19,200	
Total steel	42,680	106.7
Refractory 36½ inches		456
Metal 27 inches		1160
Slag 6 inches		60
Maximum loading		1783
Metal to total weight, per cent		6.0
FURNACE C		
Plate, ¾-inch	12,000	
I-beams, 15-inch, 42-pound at 18-inch centers	10,920	
I-beams, 24-inch, 100-pound at 22-inch centers	22,000	
Total steel	44,920	112.4
Refractory 37 inches		462.5
Metal 26 inches		932
Slag 6 inches		60
Maximum loading		1567
Metal to total weight, per cent		7.2
FURNACE D		
Plate, ¾-inch	12,000	
Channels, 12-inch, 40-pound flat flange to flange	16,000	
I-beams, 12-inch, 40.8-pound at 8-inch centers	24,500	
Total steel	52,500	131.3
Refractory 36 inches		450
Metal 26 inches		932
Slag 6 inches		60
Maximum loading		1573
Metal to total weight, per cent		8.3
FURNACE E		
Plate, ¾-inch	12,000	
I-beams, 15-inch, 60.8 pound, 10½ in 20 feet	12,760	
Total steel	24,760	62.0
Refractory 32½ inches		406
Metal 27 inches		968
Slag 6 inches		60
Maximum loading		1496
Metal to total weight, per cent		4.1
FURNACE F		
Plate, 1-inch	16,000	
I-beams, 24-inch, 100-pound at 19-inch centers	26,000	
Total steel	42,000	105.0
Refractory 37 inches		462.5
Metal 32 inches		1146
Slag 6 inches		60
Maximum loading		1734
Metal to total weight, per cent		6.0
FURNACE G		
Plate, ¾-inch	12,000	
I-beams, 12-inch, 40.8-pound at 19-inch centers	10,600	
I-beams, 24-inch, 100-pound at 18-inch centers	26,000	
Total steel	48,600	121.5
Refractory 30 inches		375
Metal 30 inches		1074
Slag 6 inches		60
Maximum loading		1631
Metal to total weight, per cent		7.5
FURNACE H		
Plate, ¾-inch	12,000	
*CB., 9-inch, 38.5-pound at 18-inch centers	10,000	
I-beams, 20-inch, 75-pound at 16½-inch centers	22,500	
Total steel	44,500	111.3
Refractory 39½ inches		493.5
Metal 23 inches		824
Slag 6 inches		60
Maximum loading		1489
Metal to total weight, per cent		7.5
FURNACE I		
Plate, ¾-inch	12,000	
I-beams, 15-inch, 60.8-pound at 24-inch centers	13,380	
*CB., 27-inch, 112-pound at 18-inch centers	31,350	
Total steel	56,730	141.8
Refractory 36 inches		450
Metal 30 inches		1074
Slag 6 inches		60
Maximum loading		1726
Metal to total weight, per cent		8.2
FURNACE J		
Plate, ⅝-inch	10,000	
I-beams, 15-inch, 42-pound at 16-inch centers	12,600	
I-beams, 24-inch, 100-pound at 18½-inch centers	26,000	
Total steel	48,600	121.5
Refractory 44 inches		550
Metal 27 inches		967
Slag 6 inches		60
Maximum loading		1699
Metal to total weight, per cent		7.2
FURNACE K		
Channels, 15-inch, 55-pound, flat flange to flange	17,600	
I-beams, 18-inch, 75-pound at 20-inch centers	18,000	
Total steel	35,600	89.0
Refractory 41 inches		512
Metal 26 inches		932
Slag 6 inches		60
Maximum loading		1593
Metal to total weight, per cent		5.6
FURNACE L		
Plate, ¾-inch	12,000	
I-beams, 18-inch, 75-pound at 18-inch centers	19,500	
Total steel	31,500	78.8
Refractory 42¾ inches		534
Metal 30 inches		1074
Slag 6 inches		60
Maximum loading		1747
Metal to total weight, per cent		4.5
FURNACE M		
Plate, ¾-inch	12,000	
Channels, 12-inch, 40-pound, flat flange to flange	16,000	
I-beams, 12-inch, 40.8-pound at 8-inch centers	24,400	
Total steel	52,400	131.0
Refractory 40½ inches		506
Metal 42 inches		1505
Slag 6 inches		60
Maximum loading		2202
Metal to total weight, per cent		6.0
FURNACES N AND O		
Plate, ⅞-inch	14,000	
I-beams, 15-inch, 60.8-pound at 16-inch centers	18,250	
†BB., 30-inch, 190-pound at 21½-inch centers	40,180	
Total steel	72,430	181.0
Refractory 36⅝ inches		457.5
Metal 31 inches		1110
Slag 6 inches		60
Maximum loading		1809
Metal to total weight, per cent		10.0

*Carnegie beams.
†Bethlehem beams.

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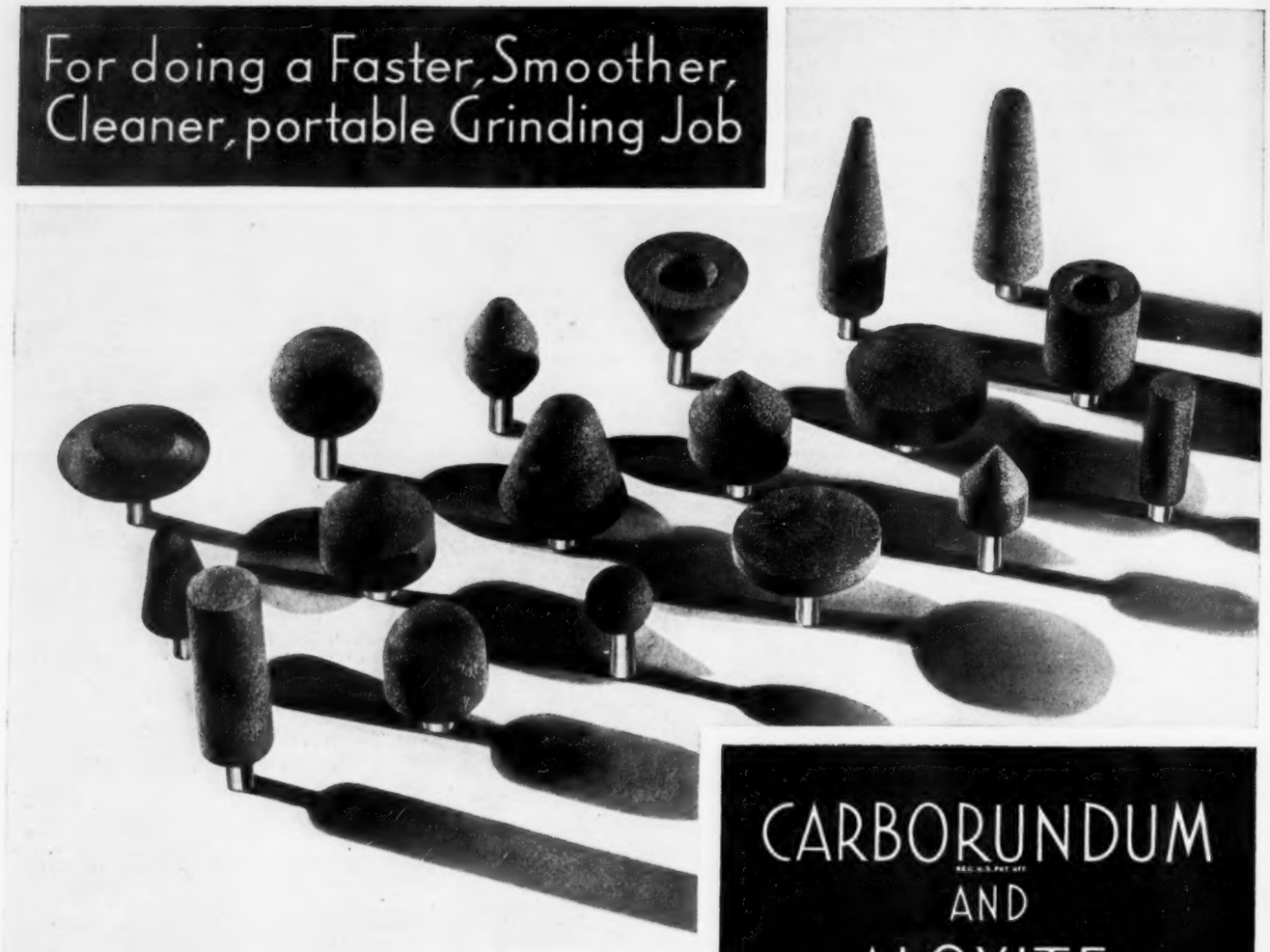

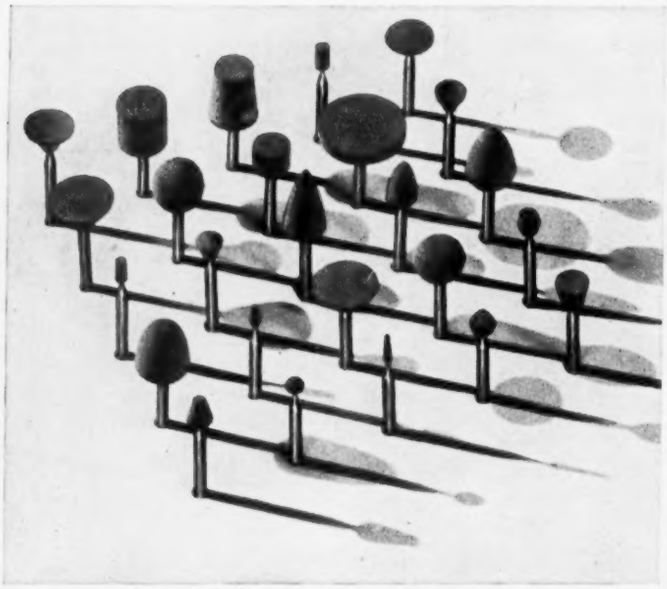

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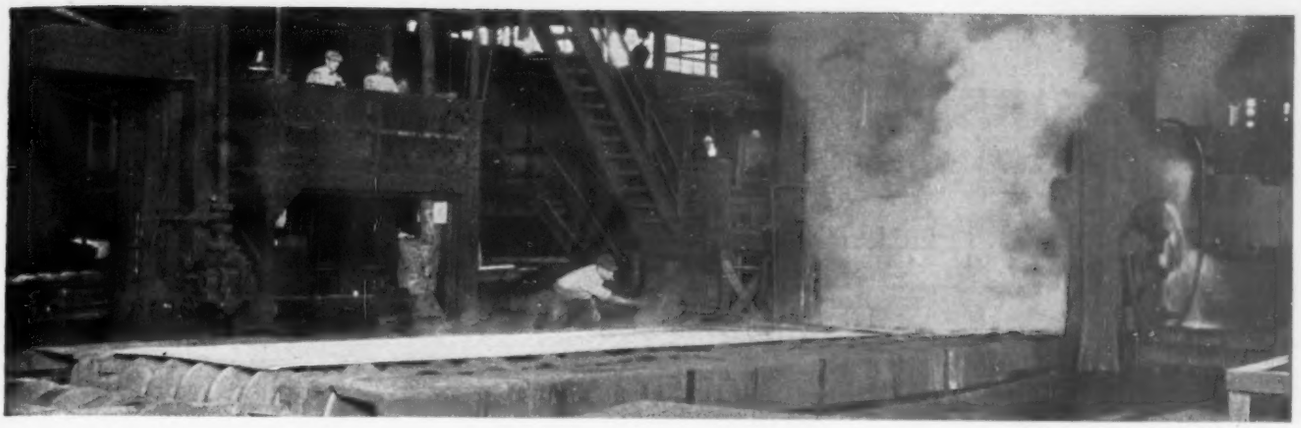
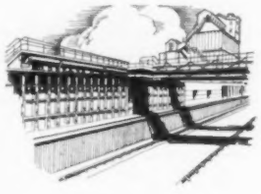


PROGRESS IN STEELMAKING

RESULTS of an investigation recently completed at the University of Michigan disclose that as little as 0.1 per cent sulphur dioxide in the products of combustion seriously increases the scaling loss of steel at all temperatures in the forging range. Larger amounts of this gas increase these losses still more.



STEEL apron conveyors and feeders recently developed to withstand the abrasive action of material handled at by-product coke ovens and sintering plants embody a new method of attaching the conveyor pans to the chains. A new type pivot link causes the pans to overlap snugly, prevents leakage of material and enables the conveyor to travel evenly and without strain around the sprockets.

♦ ♦ ♦

While a certain amount of nonmetallic matter originating from the charge and from the oxidation of silicon is eliminated when open-hearth heats are ored, the addition of spiegel with the ore has been found advantageous in the removal of these impurities.

♦ ♦ ♦

Mounting a grinding machine on concrete foundations at a steelworks machine shop reduced vibration to a minimum and permitted the use of harder wheels, thus affording longer life and better ground surfaces.

♦ ♦ ♦

Results of tests conducted by German metallurgists to determine what relation the quality of steel has on sticking sheets disclose that an oxygen content exceeding 0.015 per cent is likely to cause sticking and the higher the oxygen the worse the sticking becomes. An addition of titanium is recommended for sheet steel when the sheets are intended for pressure hollow ware. The tendency to blister was found to be in proportion to the extent to which segregation of phosphorus, carbon and sulphur are present.

♦ ♦ ♦

Induction motors for actuating mechanical feeder and catcher tables on sheet and tin mills now are being built to reverse as high as 40 times a minute with a temperature rise below 122 degrees Fahr.

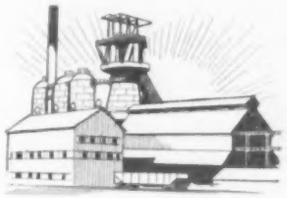
♦ ♦ ♦

Safety in tilting carboys of acid in steelworks laboratories is incorporated in a newly designed tilter consisting of a pair of bow-shaped elements attached to a steel frame. Turning a clamping screw locks the steel frame on the carboy which, when rocked on the bow-shaped elements, assures complete control throughout the pouring operation.

ARC welding electrodes with a spiral winding of asbestos yarn, which serves to hold a heavy mineral flux to the core, are a recent development for steel plant service. The mineral ingredients of the flux causes it to burn without objectionable fumes or smoke while the thickness of the coating enables the operator to ride the electrode on the work, thus letting the flux coating space the arc.

♦ ♦ ♦

Maintaining the temperature of an 80-ton galvanizing bath within plus or minus 2 degrees Fahr. is accomplished at a plant in the South by a 2-point potentiometer-type recording controller in conjunction with 36 gas burners well distributed to provide uniform heat input. Fourteen burners operate at predetermined settings without control and 22 receive fuel through two 3-position automatic control valves. By this arrangement fuel consumption is minimized, kettle life prolonged, drossing reduced and quality of coating improved.



THREE insulated stoves serving an Ohio blast furnace have been rebuilt with octagon tile checkers and zone graduated filler inserts to afford a heating surface of 206,152 square feet per unit, thus surpassing the heating capacity of any individual hot blast stove built in this country.

♦ ♦ ♦

Contactors and relays used to control the actuation of mechanical feeder and catcher tables on sheet and tin mills are built to function from 1 to 1¼ million times per month per mill and to give 12 months or longer service without replacement.

♦ ♦ ♦

Operation of a repeater at a hot strip mill in the Pittsburgh district now is controlled by a photoelectric cell. Strip, looping from the roughing to the finishing mill, passes between the two circular gates of the repeater and intercepts a beam of light which causes a 12-horsepower motor to open the gates and allow the loop to accumulate. As the rear end of the strip passes the beam of light, the control circuit causes the motor to close the gates for the next piece. The gates are made to function two or three times a minute.

Scanning the Field of Technology

A Digest of Important Developments Pertaining to the Production, Processing, Application and Performance of Steel

Three Methods for the Drilling of Deep Holes

By A. L. DeLeeuw, American Machinist, Sept. 28, 1932, *p.* 1021, 3 *pp.*, 4 *illusts.*

Two methods of drilling deep holes are in general use. The most common one is to hold the piece of work stationary and revolve the drill. A better method, also in common use, is to hold the drill stationary and revolve the work, as in drilling of gun barrels. A number of difficulties arise with both of these methods, chief among which is the matter of keeping the drilled hole straight. A small deviation of the axis of the hole leads to difficulties which cannot be corrected by subsequent boring or reaming.

A third method avoids the major troubles of the other systems of deep hole drilling and is much more productive. This is the method of rotating both the drill and the work. Such drilling can be done on a lathe if the carriage is provided with a fixture containing an individually driven spindle. Main advantage of this method lies in the fact that the axis of the hole is the same as the axis of rotation of the work and is independent of the direction of feed.

—Steel, 11-7-32

Factors Which Affect Hardenability of Steel

By Edgar C. Bain, Campbell Memorial lecture at annual meeting of American Society for Steel Treating in Buffalo, Oct. 3-7, *Metal Progress, November* 1932, *p.* 17, 6 *pp.*, 3 *illusts.*, 2 *charts.*

Steels of similar carbon content and of less than 1 per cent total alloying elements harden differently, mass, shape and quenching conditions being the same. Some will be hardened to the center, others only in a shallow zone, still others may even have soft spots on the surface. This is the problem considered in the paper. After a discussion of the structures found in plain carbon tool steels, Dr. Bain summarizes his propositions—first, that hardenability depends upon the actual rate at which its austenite transforms to fine pearlite; and second, that this rate depends upon its composition and its effective grain size. The finer the grain size, the more rapid the transformation and therefore the lower the hardenability. In conclusion the author questions:

(1) May it be that the primary influence of any element (including oxygen) in true solid solution in austenite of a specified grain size is to retard the rate of transformation and to favor deeper hardening.

(2) May it be that the main effective contributor to shallow hardening is oxygen combined with elements such as aluminum and vanadium in the form of a fine dispersion of insoluble particles?

—Steel, 11-7-32

Safeguarding Design by X-Ray Testing

By H. H. Laurie, in Machine Design, September 1932, *p.* 20, 4 *pp.*, 6 *illusts.*

Three types of X-ray analysis have been developed, all of which are applicable to the metalworking industries: Analysis by absorption, giving shadow pictures on a film or fluorescent screen; analysis by interference or diffraction patterns; and spectral analysis—a photographic record of characteristic spectrum lines of any material. The first method is the easiest, least expensive and most readily analyzed. Its applications in the field of metals lie in the detection of flaws in castings and welded structures subjected to high pressures or stresses, the alignment of enclosed intricate mechanisms, development of new processes and the correction of old methods of manufacture.

—Steel, 11-7-32

Several Causes of Quench Cracks in Forgings

By Bernard Thomas, Heat Treating and Forging, October 1932, *p.* 577, 3 *pp.*, 1 *illust.*

Where steel forgings have been annealed prior to hardening, scale often forms in hard patches on the surfaces. Such patches often will give rise to quench cracks, the more drastic the quenching medium the greater being the possibility of their occurrence. Solid-fuel fired furnaces provide an atmosphere which produces an easy-lifting scale and possibility of cracks is least likely in steel heated in these furnaces. Other sources of quench cracks are burns, forging defects, piping and segregation arising in the steelmaking operations, irregular shape of the piece, etc. Composition of the steel as well as the type of quenching medium used have their effect upon the appearance of quench cracks.

—Steel, 11-7-32

Application of Micarta to Roll Neck Bearings

By W. E. Brindley, in Blast Furnace and Steel Plant, October 1932, *p.* 778, 3 *pp.*, 2 *illusts.*, 2 *tables.*

Applications of laminated phenolic materials, or micarta, have experienced a rapid growth during the last few years for designs requiring a high degree of mechanical strength. Outstanding properties of the material are its high strength, light weight, relative toughness, low moisture absorption and resistance to corrosion. Micarta bearings for roll neck service were first installed in a rod mill in the Pittsburgh district several years ago. Among types of mills using the bearings for roll neck service are rod, bar, strip, hoop, skelp and billet mills. It has been found that laminated bearings may be applied to stands where the pressures do not exceed 2500 pounds per square inch and the shaft speed is over 100 feet per minute.

—Steel, 11-7-32

Mixtures, the Perlit Process, Heat Treatment of Cast Iron

By Horace J. Young, London, Eng., Transactions of the American Foundrymen's association, October 1932, *p.* 325, 16 *pp.*, 9 *illusts.*, 21 *tables.*

In the author's experience, practically every type of casting produces some problem of interest and is well worthy of study. For this paper, he picks out three to be given consideration; first, the numerous mixtures which can be made from a stockyard containing four pig irons, steel and scrap, to produce a given analysis. The characteristics of a series are price and satisfactory results. Secondly, he discusses what can be accomplished by the perlit or hot-mold process in comparison with cold-mold results. The third proposition discussed is heat treament. Possibilities of heat treatment are given, and photomicrographs of heat treated irons are shown.

—Steel, 11-7-32

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DRAINS
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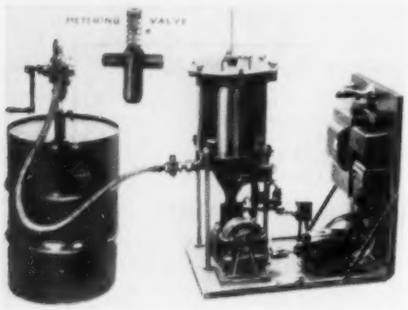


Hills-McCanna lubrication system handles light greases and heavy oils

Designs Multifeed System Of Lubrication

Hills-McCanna Co., 2349-59 Nelson street, Chicago, has developed a single line multifeed system for application of light greases and heavy oils to points requiring regular lubrication. Depicted in the illustration shown above, the main unit is placed in a convenient location and a single feeder line taken to the farthest point requiring lubrication. Branch lines are taken from the main line to each bearing, at which an independent mechanical measuring unit is placed.

The measuring valve allows only the amount of grease it is set for to be fed to the bearing, and then acts as a shut-off valve, preventing any more lubricant passing and being wasted. Regardless of the amount of pressure in line only that amount for which valve is set can pass to the bearing. An added advantage is that the pressure is applied to the line only at the time the points are being lubricated.

Systems can be motor driven, mechanically operated, or operated by a hand crank, the type depending upon the service. Hoppers, valves, motors, etc. are made in sizes for a variety of applications. The single line multifeed systems will handle all of the light greases and heavy oils in general use.

◆

New Drilling Machine Has Thirty-Nine Spindles

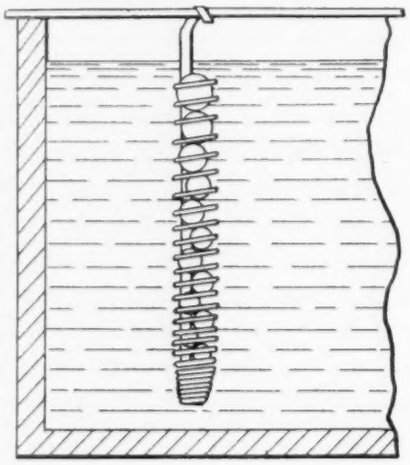
Foote-Burt Co., Cleveland, recently developed a three-way, 39-spindle drilling machine for drilling bottoms and ends of automobile cylinder heads. A rear view of the unit is shown in the accompanying illustration. Side heads each have four spindles and are driven by 10-inch diameter cam units. Rear head has 31 spindles and is driven by a 14-inch diameter cam unit. Each of the units is complete within itself, having individual motor drive.

The main lever is used for starting the cycle for each head which after completion returns to the starting point where it remains until the starting lever is again operated.

◆

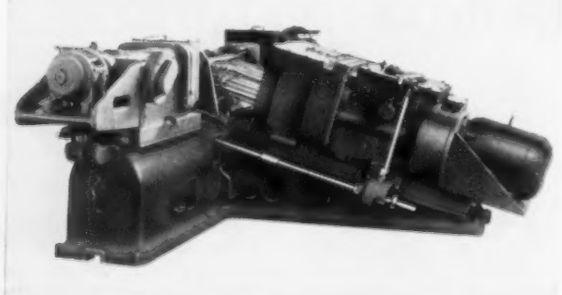
Granted Patent on Container For Ball Anodes

Udylite Process Co., Detroit, just recently was granted a patent designated No. 1,868,052, covering a container for ball anodes, and a supporting stem. As shown in the accompanying illustration, the container is constructed of steel wire in the form of a helical coil. Relatively large balls of the metal to be plated are placed in the top of the container, and as these balls dissolve they descend slowly and become smaller.

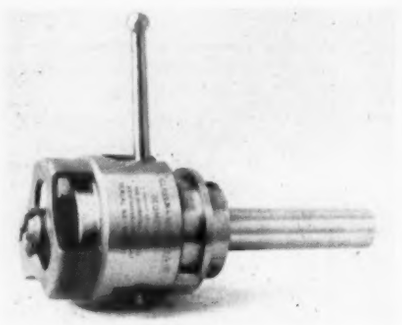


In order to avoid any loss of the plating metal, successive convolutions of the wire helix are wound closer together toward the bottom. The steel anode containers are constructed by spot welding the wire helix to the supporting stem. The stem is bent in the form of a hook to hang over the anode bus bar, thus serving both as the support and the principal conductor of electricity to the anode balls. Steel of the container serves only to conduct the current to the soluble balls and is not in itself active or attacked under the conditions of use.

Above—Newly patented Udylite ball anode container



Left—Foote-Burt three-way, 39-spindle drilling machine



Class SL Geometric collasping tap for small holes

◆

Small Collapsing Tap Has Wide Application

Geometric Tool Co., New Haven, Conn., recently introduced a class SL small collapsing tap, shown above, that has a sturdy, rigidly supported chaser. While the chaser construction and front end operating mechanism differ from similar features of class S taps, nevertheless the smaller tool has many features in common with the standard line. For example the class SL tap can be used in live spindles or stationary holders without the purchase of any additional parts. It may be operated as a plate trip tap, or a spool trip tap; it may be reset by the handle or by

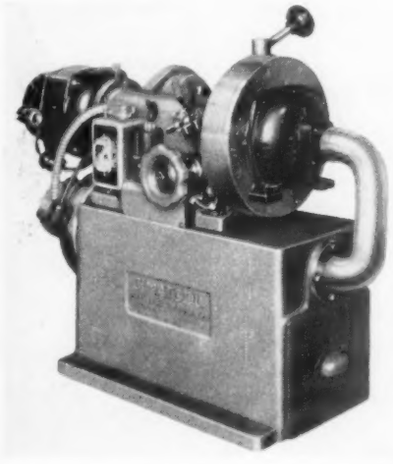
a fork or yoke riding in the spool section of the closing sleeve.

◆

Introduces Bench-Type Boring Machine

City Machine & Tool Works, East Third at June streets, Dayton, O., recently completed work on the development of a line of diamond boring machines made in three types to meet a wide range of applications. The machine illustrated herewith is a bench-type machine. Holes up to ¾-inch diameter can be bored on this unit. The illustration shows the machine equipped for boring the bronze bushing in a motor end frame. In this case the machine is equipped with a magnetic chuck.

Attention is called to the fact that current for the driving motor is by-



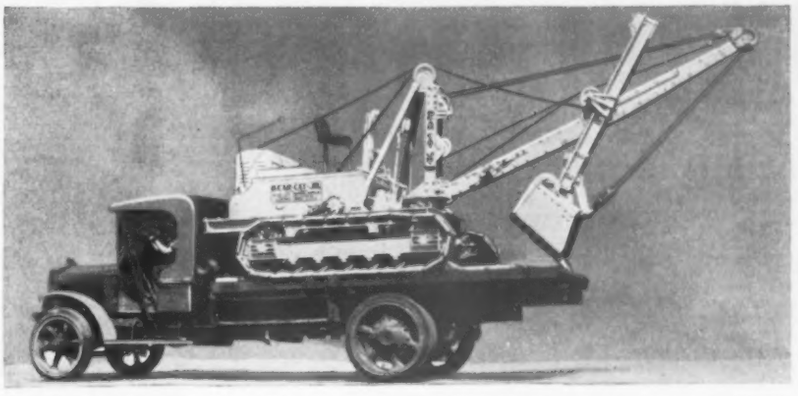
Bench-type boring machine built by City Machine & Tool Works

passed through the magnetic chuck in such a way that the starting switch is inoperative unless the chuck is energized and holding the work securely in place. With both switches closed the spindle starts rotating and feeding the boring tool through the hole to be finished. The spindle is fed forward against the tension of a spring and after the bore has been completed an automatic trip opens the switches thereby cutting off current from the driving motor. Simultaneously an electrically operated friction brake instantly stops rotation of the spindle, and the clutch controlling the spindle feed is released also.

◆

Convertible Shovel Can Be Transported on Truck

Bearcat Shovel Works, division of Byers Machine Co., Ravenna, O., has



New ⅜-yard convertible shovel made by Bearcat Shovel Works

developed a ⅜-yard convertible shovel which is light enough to be mounted and transported on a heavy-duty motor truck as shown in the accompanying illustration. The unit weighs 6½ tons complete as a shovel. All operations of traveling, steering from both crawlers, swinging, independent crowding and hoisting are accomplished through only three operating shaft assemblies on the fully-enclosed machinery deck.

A three-speed transmission between the motor and take-off gear provides three travel speeds and two operating speeds for ordinary or light digging. The gear-driven swinger can be locked to prevent swinging while traveling. Motor is a four-cylinder slow speed industrial type developing 30 horsepower.

◆

Offers Cutting Attachment For Welding Torch

Smith Welding Equipment Corp., 2619-33 Fourth street, S. E., Minneapolis, has placed on the market a new cutting assembly or attachment for a welding torch. The cutting oxygen valve is a triple thread, screw valve

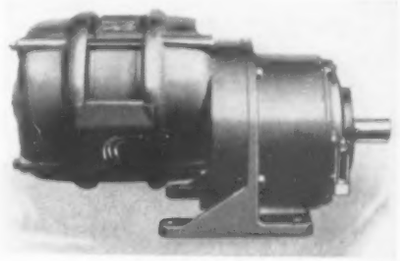
Cutting attachment introduced by Smith Welding Equipment Corp.

with knurled thumb wheel as shown in the illustration herewith, so arranged that it can be opened and closed quickly with the thumb. The valve forging has been reduced to simple design. Double seats and all other parts, have been eliminated, resulting in simplicity of construction and reduced manufacturing costs.

◆

Reduction Unit Is Built Integral with Motor

Ideal Electric & Mfg. Co., Mansfield, O., is marketing a line of geared motors which have a gear reduction unit built integral with the motor. These units are available



Geared motor recently announced by Ideal Electric & Mfg. Co.

in all gear ratios from 2.09 to 1 up to 376 to 1, giving output speeds of from 86.1 revolutions per minute to 4.7 revolutions using the standard 1800 r.p.m. motor supplied.

For reduction ratios up to about 6 to 1, the reducer consists of a single-stage helical gear unit. For higher ratios up to and including 24.5 to 1, a two-stage helical gear reducer is used. For reduction ratios of 30 to 1 and higher, one-stage of helical and one-stage of heliocentric gears give the required reduction. The accompanying illustration above shows a heliocentric geared motor unit.

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Steel Rate Gains to 21, but Bookings Decline

Auto Needs Help Put Operations Up—Election a Retarding Factor—October Pig Iron Output Increases—Shape Prospect Better than Actual Awards

STEEL production advanced from 19½ per cent to 21 in the week ended Nov. 5, first time since early June that the rate has crossed 20 per cent, and if schedules for this week are maintained a further rise to about 22 per cent is indicated.

This improvement is largely the result of a bunching of orders in the Pittsburgh district, where the operating rate is up two points to 19 per cent, and of the release of automotive requirements, especially to Cleveland and Youngstown mills.

Producers at Cleveland last week pushed their activity up seven points to 33½ per cent, with a further increase to 38 probable this week. Youngstown mills are up half a point, to 19 per cent. The Edgar Thomson rail mill of the Carnegie Steel Co. was to resume Nov. 6 for a short run.

But beyond the current week, producers are not disposed to look. Actual bookings since Nov. 1 have been strikingly smaller than the average for October, a slump which is in large measure ascribed to uncertainty over the election.

Granting that the election is a variable, the industry is hopeful that the emergency government measures will mitigate the easing-off in the markets which usually characterizes November and December. Automobile production has definitely improved, and R. F. C. loans for railroad equipment repairs and for building projects cannot help but create some tonnage.

Steel prices may face a test shortly. For the general run of small buyers, current levels are firm. Automotive consumers, however, have pressed for and in some instances won concessions, and if recovery proceeds far enough to conjure up genuine tonnage the temptation to bid for it might be strong.

In scrap prices a weaker tone is evident, dealers at Pittsburgh offering heavy melting steel at $9, or $1 off the recent peak. In many districts the necessity for further buying to substantiate present levels is great.

Because the repairs will be light, comparatively little steel will be required for the New York Central program of 13,000 cars. Norfolk & Western, Reading and Baltimore & Ohio are buying some repair material. Chesapeake & Ohio has released 135,000 screw spikes. Dominion Steel & Coal Co. has booked 150,000 tons of rails for the Canadian government.

Automotive releases for sheets, chiefly by Chrysler and Chevrolet, have enabled sheet mills at Cleveland to speed up to 40 per cent and at Detroit to 35, highest this year. First pipeline of size in months is a projected 3500-ton line for a Pure Oil Co. subsidiary.

Structural steel awards at 8201 tons are below the season's average. An R. F. C. loan makes 12,000 tons for a Hudson river bridge at Catskill, N. Y., a possibility. Next week bids will be called for on 200,000 tons for the government-financed San Francisco Bay bridge.

Shipments more than orders continue to be stressed in pig iron. The St. Louis producer has reduced its stocks 30,000 tons in two months. At Philadelphia, where malleable iron quotations are weaker, 6000 tons of basic have been sold. Seasonal gains by radiator plants have expanded consumption at Pittsburgh.

October developed a 5 per cent gain in pig iron production, the daily rate going from 19,788 tons in September to 20,795 tons in October, and in active furnaces there was a net gain of four as of Oct. 31. Since the low of August, nine furnaces have resumed and the daily rate has jumped 22.1 per cent. A comparable improvement will be shown by steel ingot statistics for October.

The iron and steel composite of STEEL was unchanged at $29.32 last week, and the finished steel composite at $47.70, but an adjustment in compressed sheets put the steel scrap composite up 8 cents to $6.91.

Composite Market Averages

	Nov. 5	Oct. 29	One Month Ago Oct., 1932	Three Months Ago Aug., 1932	One Year Ago Nov., 1931	Ten Years Ago Nov., 1922
Iron and Steel Composite	$29.32	$29.32	$29.32	$29.32	$30.61	$42.08
Finished Steel Composite	47.70	47.70	47.64	47.46	48.17	59.01
Steelworks Scrap Composite	6.91	6.83	6.96	6.06	8.22	17.53

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

COMPARATIVE PRICES OF IRON, STEEL AND COKE

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Nov. 5, 1932	Oct., 1932	Aug. 1932	Nov. 1931
Pig Iron				
Bessemer, del., Pittsburgh	$15.76	15.76	15.76	17.76
Basic, valley	14.00	14.00	14.00	15.00
Basic, eastern, del. eastern Pa.	13.50	13.60	13.85	16.00
No. 2 foundry, del. Pittsburgh	15.76	15.76	15.76	17.76
No. 2 foundry, Chicago	15.50	15.50	15.50	17.00
*Southern No. 2, Birmingham	11.00	11.00	11.00	12.00
**No. 2X, Virginia furnace	17.75	17.75	17.81	18.00
**No. 2X, Eastern, del. Phila.	14.01	14.16	14.38	16.01
Malleable, valley	14.50	14.50	14.50	16.50
Malleable, Chicago	15.50	15.50	15.50	17.00
Lake Superior charcoal, del. Chi.	23.04	23.04	23.04	25.04
Gray forge, del. Pittsburgh	15.63	15.63	15.63	17.13
Ferromanganese, del. Pittsburgh	73.24	73.24	73.24	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

Coke				
Connellsville, furnace, ovens	2.00	2.00	2.00	2.35
Connellsville foundry, ovens	2.75	2.75	2.90	3.25
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	29.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	29.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	29.00
Wire rods, Pittsburgh	37.00	37.00	37.00	35.00

	Nov. 5, 1932	Oct., 1932	Aug. 1932	Nov. 1931
Finished Material				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.89
Iron bars, Chicago	1.65	1.65	1.65	1.65
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.75	1.75	1.75	1.76
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.60	1.60
Tank plates, Philadelphia	1.79½	1.79½	1.79½	1.80½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.70	1.70	1.70	1.85
Sheets, No. 24, hot ann., Pitts.	2.10	2.10	2.15	2.40
Sheets, No. 24 galvan., Pitts.	2.85	2.80	2.80	2.90
Sheets, No. 10 blue anneal., Chi.	1.85	1.85	1.85	2.00
Sheets, No. 24 hot ann., Chi.	2.25	2.25	2.35	2.55
Sheets, No. 24 galvan., Chi.	2.90	2.90	3.00	3.05
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.95	1.90
Tin plate, per base box, Pitts.	4.75	4.75	4.75	4.75
Scrap				
Heavy melting steel, Pitts.	$9.25	9.50	8.55	10.25
Heavy melting steel, eastern Pa.	7.25	7.25	6.40	7.95
Heavy melting steel, Chicago	6.00	6.00	5.40	7.65
No. 1 wrought, eastern Pa.	7.25	7.25	6.25	9.50
No. 1 wrought, Chicago	5.25	5.25	4.00	8.00
Rails for rolling, Chicago	8.25	8.00	6.50	10.00

Sheets

Automotive Orders Lift Ohio Mill Operations—Pennsylvania Railroad Places 2500 Tons

SHEET PRICES, PAGE 47

Pittsburgh—Over 2500 tons of No. 11 and lighter blue annealed sheets have been bought by the Pennsylvania railroad. A nearby mill is reported to have shared in the business. An important manufacturer placed more than 1000 tons of sheets recently. A larger volume of pending automotive work is being figured. In addition to orders from Chrysler, Buick and a few others, there will be buying by other Detroit interests shortly. On an inquiry for about 30 tons of galvanized sheets recently, four mills quoted 2.85c, Pittsburgh, plus regular extras. No. 10 blue annealed continue 1.55c; and No. 24 hot-rolled, 2.10c to 2.20c. Customers are demanding concessions below the cold-rolled market of 2.10c for No. 10 and 2.60c for No. 20.

New York—Pending the appearance of sufficient tonnage to afford a test, sheet prices here are unchanged at the levels prevailing for the past three weeks. Galvanized sheets are affected by sluggish building operations. They are holding at 2.85c, Pittsburgh. No. 24 hot rolled annealed are 2.10c to 2.20c, Pittsburgh, subject to occasional shading of $2 a ton.

Philadelphia—Bids are in on 200 tons of galvanized annealed sheets for road signs for Pennsylvania. Automotive orders are in prospect. Radio manufacturers are buying little. Stovemakers are taking fair quantities of annealed stock, which is moving generally at 2.60c, Pittsburgh. Irregularity is still noted in some cold finished sheets.

Cleveland — Automotive releases have lifted sheet mill operations here to around 40 per cent, best of the year, and have raised the rate in the nearby Detroit district to about 35 per cent. These are mainly responsible for the increase in steel ingot production here. The largest releases have come from Chevrolet, whose production plan calls for 110,000 cars by Feb. 1. Operations have been stepped up at its Fisher Body plant in Cleveland. Little change is noted in the light demand from other consumers. Several hundred tons of galvanized will be required for the new Cleveland postoffice. Prices of autobody sheets have been under pressure. Inquiries for autobody seconds have been more frequent.

Cincinnati—The sheet market is featureless, production holding an even rate. Buying is close to immediate needs.

Chicago—Sheet demand lacks improvement and mills are unable to increase the 20 per cent production rate. Automotive demand is gaining gradually. Little hope is entertained of any definite improvement in consumption by the farm implement industry the rest of this year. Prices lack strength, with producers generally adhering to 2.30c, base, for hot-rolled annealed sheets, and 2.95c for galvanized.

St. Louis—October sheet business for the leading local producer was equal to that of September, the best month since last March. Galvanized demand was a little below September. The market is spotty and irregular.

Lewis S. Reid, formerly chief engineer, Magnetic Analysis Corp., and also metallurgical editor, *Aviation Engineering*, has joined the staff of Lucius Pitkin Inc., New York, as associate metallurgist.

Lamson Co., Syracuse, N. Y., will distribute the overhead chain conveyor system manufactured by Jarvis B. Webb Co., Detroit.

CURRENT FINISHED STEEL PRICES

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, delivered	1.70c
New York, delivered	1.90c
Birmingham, base	1.70c
Philadelphia, delivered	1.86c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, delivered	2.01c
New York, delivered	2.05c
St. Louis, delivered	2.04c
Birmingham, base	1.85c
San Francisco c.i.f.	2.32½c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.10c to 2.20c
Gary, Ind. Harbor, base	2.20c to 2.30c
Chicago, delivered	2.25c to 2.35c
New York, delivered	2.45c to 2.55c
Philadelphia, del.	2.41c to 2.51c
Birmingham, base	2.35c
St. Louis, delivered	2.54c
San Francisco, c.i.f.	2.85c
Detroit, delivered	2.28½c

GALVANIZED NO. 24

Pittsburgh, base	2.85c
Gary, Ind. Harbor, base	2.95c
Chicago, delivered	3.00c
Philadelphia, delivered	3.06c to 3.16c
New York, delivered	3.10c to 3.20c
Birmingham, base	3.00c
St. Louis, delivered	3.19c
San Francisco, c.i.f.	3.50c

AUTOBODY NO. 20

*Pittsburgh, base	2.65c

FURNITURE

*Pittsburgh, No. 10 heavy	2.50c
*Pittsburgh, No. 20 light	3.00c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.30c to 2.40c
Gary, base	2.40c to 2.50c
St. Louis, delivered	2.77½c

HEAVY COLD ROLLED NO. 10

*Pittsburgh, base	2.00c to 2.10c
Gary, Ind. Harbor, base	2.20c
Chicago, delivered	2.25c
Philadelphia, delivered	2.41c
New York, delivered	2.55c

COLD ROLLED NO. 20

*Pittsburgh, base	2.50c to 2.60c
Gary, Ind. Harbor, base	2.70c
Chicago, delivered	2.75c
Philadelphia, delivered	2.91c
New York, delivered	2.95c

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95

(Per pound)

Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, delivered	1.79½c
New York, delivered	1.90c
Boston, delivered	2.02c
Buffalo, delivered	1.85½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Birmingham, Ala. base	1.75c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	2.00c
St. Louis, delivered	1.94c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, delivered	1.75c
New York, delivered	1.87c
Boston, delivered	2.00½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, Ala., base	1.75c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, delivered	1.91c
New York, delivered	1.95c
Boston, delivered	2.02c
Pittsburgh, cold finish	1.75c
Pittsburgh, forg. qual.	1.85c
San Francisco, c.i.f.	2.10c

RAIL STEEL

Chicago Heights	1.50c
Eastern mills	1.35c

IRON

*Chicago, base	1.60c to 1.65c
New York, delivered	1.85c to 1.90c
Philadelphia, delivered	1.81c to 1.86c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Pitts., stock lengths, mill	1.60c
Chicago, billet	1.50c to 1.60c
Chicago, rail steel	1.30c
Philadelphia, cut lengths	1.86c
Cleveland, cut lengths	1.75c

Cold-Finished Bars, Shafting

Base, Pittsburgh

10,000 to 19,999 pounds	1.70c
20,000 to 59,999 pounds	1.65c
60,000 to 99,999 pounds	1.60c
100,000 pounds and over	1.57½c

Chicago, Cleveland, Buffalo 5c higher; Detroit, 20c; eastern Michigan 25c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold Strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Tin and Terne Plate

Per 100-pound box, Pittsburgh

Tin plate, coke base, cont.	$4.75
Tin plate, coke base, stock	3.85
Long ternes, 24, unassorted	2.80

Gary, Ind., base 10 cents higher

Alloy Steel

Hot Rolled—F.o.b. Pittsburgh, Buffalo, Chicago and Massillon, O.

Hot rolled; base 2.45c to 2.65c, mills; differentials to various consumers

S.A.E.	Alloy Diff.	4600 .20 to .30 Mo. 1.25-1.75 Ni. 1.05	
2000	0.25	5100 .80 - 1.10	
2100	0.55	Cr.	0.45
2300	1.50	5100 Cr.	
2500	2.25	spring	0.20
3100	0.55	6100 bars	1.20
3200	1.35	6100 Spring	0.95
3300	3.30	Cr., Ni., Van.	1.50
3400	3.20	Carbon van	0.95
4100 .15 to .25		9250 (flats)	0.25
Mo	0.50	9250 (rds., sq.)	0.50

Strip, Hoops, Bands

Hot-rolled strip up to 23 15/16 in. wide Pitts.	1.45c
Do., Chicago	1.55c
Do., del. Philadelphia	1.76c to 1.81c
Do., del. New York	1.80c to 1.85c
Cooperage hoop, Pitts.	1.55c to 1.60c
Do., Chicago	1.65c to 1.70c
Cold-roll, strip, Pitts., Cleve.	2.00c
Worcester, 3 tons over	2.20c

Rivets, Wrought Washers

Struc., c.l., Pitts-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. and smaller, Pitts., Chicago, Cleveland	70, 10 and 5 off
Washers, c.l., Pitts. dist.	$6.50 to 6.75 off
Do., Chicago district	7.00 to 7.50 off

Rails, Track Material

Standard rails, mill	$40.00
Relay rails, Pitts, 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	23.00 to 25.00
Light rails, 25-45, mills	$30.00
Light rails, Chicago	$34.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.40c
Spikes, boat, barge, Pitts.	2.65c
Track bolts, Chicago	3.50c
do., standard, jobbers	73 off list
Tie plates, Pitts.	$35.00
Tie plates, Chicago	$35.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 75 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 75 off
Tire bolts ..... 60 and 10 off
Stove bolts, 77½, 25 and 10 off in pkgs.; 86 off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 75 off

HEXAGON CAP SCREWS

Milled ..... 80-25 off
Upset 1 in. diam. and smaller 80-25-10 off

SQUARE HEAD SET SCREWS

Upset, 1 in. and smaller ..... 75-10-10 off
Headless set screws ..... 75-10 off
Upset, larger than 1 in. ..... 75-10 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh	$2.50
Do., less carloads, 5 kegs or over	$2.90
Less than 5 kegs	$3.05
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Steel sheet piling, Pitts.	1.90c

Bars

Bar Buying Steady with Small Improvement from Automotive and Railroads Needs

BAR PRICES, PAGE 47

Pittsburgh — Heavier specifying from the Detroit district to Pittsburgh bar mills has been a feature of early November, but miscellaneous manufacturing has lessened its specifications. A large bar mill reports its orders better in October for the third consecutive month, while another producer is booking considerably more business this month than the opening week in October, the latter being both in alloy and carbon bars. Forging extras appear to be maintained and prices in general are based on 1.60c, Pittsburgh, for carbon bar stock and 2.45c to 2.65c, mill, for alloy.

Philadelphia—Manufacturing consumers are buying bars slowly; in fact, buying by railroads appears to be the only market feature and except for some purchases by the Pennsylvania railroad the latter has not been large. The price is 1.60c, Pittsburgh. Common iron bars also are moving slowly at unchanged prices 1.50 to 1.55c, Pittsburgh.

Cleveland—Bar mills here have benefited indirectly from recent automotive releases, principally for nuts and bolts. Some sales to accessory manufacturers also are noted, but the volume is not as large as anticipated. Individual orders from various manufacturing lines are small, mainly for one to ten tons. Daily average sales, however, equal those of October. Bars are steady at 1.65c, base, Cleveland.

Chicago—Changes in soft steel bar demand are slight, with small improvement in total tonnage. Automotive requirements show occasional gains. Specifications from miscellaneous consumers are fairly steady. The agricultural implement industry is placing few orders and the outlook for increased production in this field is becoming less favorable. Record low prices for grain and livestock recently affect the outlook even more adversely than several months ago. The market is holding at 1.70c, Chicago, but is tested by only small lots. Rail steel bars are steady at 1.50c, while bar iron is rather unsteady at 1.65c.

Tin Plate Mills Hold Rate; Making for Stock

Tin Plate Prices, Page 47

Pittsburgh—Tin plate mills are producing considerable stock, in contrast to light current specifications. Mill operations are averaging around 43 per cent, unchanged from a week ago. The Farrell, Pa., works was operating 30 mills for a period last week. The official market of $4.75 continues nominal.

Cold-Finished Bars Gain; Need More Auto Buying

Cold Finished Prices, Page 47

Pittsburgh—November is continuing the gains of October in specifications and shipments for cold-finished steel bars. Tonnages of cold-finished steel for volume automobile production are awaited. The minimum base price of 1.70c, Pittsburgh, is being observed and quantity differentials apply.

Plates

Reading Railroad Buys 1800 Tons—Tank Work Is Slower—Miscellaneous Orders Small

PLATE PRICES, PAGE 47

Chicago—Only small improvement in plate requirements for railroad use is in early prospect, while activity in water and oil tank construction continues quiet. Miscellaneous plate demand has shown but slight change recently. Plates are untested by large lots at 1.70c, Chicago.

New York—Small orders comprise plate business. Due to pre-election influences, apparently, trading appears the slowest in months. New York Central is expected to require a fair tonnage shortly for its car repairs. The majority of sellers quote 1.70c, Coatesville, on carlots to the general trade.

Philadelphia—With the Pennsylvania railroad's distribution of plates for its car program apparently concluded, the Reading's requirements for about 1800 tons are outstanding. These needs are expected to be covered within a few days. Details of the Pennsylvania distribution continue lacking, although most eastern plate makers failed to participate. On carlot tonnage, most sellers quote 1.70c, Coatesville.

Pittsburgh—Delivery of almost 9000 tons of plates for the Pennsylvania railroad is expected to be extended over the coming five or six months. River barge work is quiet, but there are several inquiries which some builders consider active. Tank builders are experiencing a quiet market. Plates are holding at 1.60c on small miscellaneous business.

Cleveland—Considerable work requiring plates is being figured, but buyers are slow to close, and the volume of miscellaneous small orders shows little change. For a 48-inch welded pipe line for Cincinnati, 233 tons of plates have been awarded Alco Products Inc., New York.

Pidgeon-Thomas Iron Co., Memphis, Tenn., has been awarded 80 tons of steel plates for the United States engineer, Memphis, at $2,592.34, f.o.b. Indiana Harbor, Ind.

Contracts Placed

233 tons, 48-inch pipe line, for Cincinnati, to Alco Products Inc., New York.

100 tons, 50,000 cubic feet gas holder, Ukiah, Calif., to unnamed interest.

Contracts Pending

600 tons, 85 helium storage tanks and structures, Sunnyvale, Calif.; Frederick W. Snook Co., San Francisco, low.

485 tons, buoys, all steel plate construction, for bureau of light houses, Staten Island, N. Y.; bids Nov. 21.

400 tons, tank, Garden City, N. Y.; McClintic-Marshall Corp., Bethlehem, Pa., low.

166 tons, Panama; bids of Nov. 3 and 11. Also, 29 tons of angles, tees and I-beams; bids Nov. 11.

Unstated tonnage, 300,000-gallon water tank, Madison Heights sanitary district, Amherst county, Virginia. Purchase of $62,500 bonds authorized by Reconstruction Finance Corp.

Unstated tonnage, one 70-foot steel barge, United States engineer, Jacksonville, Fla.; bids Nov. 14.

Bolt, Nut Requirements of Railroads Increase Output

Bolts, Nuts, Rivets Prices, Page 47

Chicago—Small gains were recorded during October in bolt, nut and rivet shipments and incoming business, marking the second consecutive monthly gain. Prospects for November are less favorable in view of the absence of demand from farm equipment manufacturers. Little change

is noted in railroad specifications, while automotive requirements are expanding slowly. Prices of 75 off for bolts and nuts and 2.35c, Chicago, for large rivets are well maintained.

Pittsburgh—Pennsylvania railroad has distributed about 1000 tons of bolts, nuts and rivets among several producers. About half of this tonnage was rivets. A large tonnage will be taken by the New York Central for repairs to 13,000 cars, a loan of $2,000,000 having been granted by the Reconstruction Finance Corp. Small orders for bolts, nuts and rivets predominate, with specifications moderately better than in October. Discount of 75 off on bolts and nuts and 2.25c, Pittsburgh, on large rivets is the market.

New York—Bolt and nut operations continue under 20 per cent. Apart from scattered railroad buying little is in sight. Jobbers' stocks continue large. Bolts and nuts are steady at 75 off, and rivets at 2.25c, Pittsburgh.

Buffalo Bolt Co., North Tonawanda, N. Y., is low on bolts and nuts for east and west navy yards on a combined bid of $6038.22. For the same material, eastern yards, under another schedule, Columbus Bolt Works Co., Columbus, O., is low with $4596.65, all bids delivered.

Cleveland—Nut and bolt releases at one time during October were approximately 40 per cent ahead of September for the comparable period, but the month ended with volume about 4 per cent over the preceding month. Rivet tonnage was practically the same as in September. Last week, however, business in nuts and bolts increased, principally in releases from automotive builders, railroads and jobbers. Prices are firm.

Builds Unusual Stills

A. O. Smith Corp., Milwaukee, is making delivery of two pressure cracking stills, the largest it has built, to a refining company in the Southwest. Each is 10 feet inside diameter, 65 feet long, has 3½-inch walls, weighs 250 tons. They are being shipped in specially-built gondola cars, considered as having the largest capacity of any rolling stock now in use.

Roots - Connersville - Wilbraham, Connersville, Ind., has moved its New York office to 24 State street. D. L. Dowling is district manager. W. C. Barnard and A. E. Loyd are associated with him as sales engineers.

Railroads

Further New York Central Loan Involves Large Car Repair Plan —Rail Buying Still Awaited

TRACK MATERIAL PRICES, PAGE 47

New York—New York Central is expected to begin buying shortly for the repair of possibly 13,000 cars. The road has obtained a loan of $2,500,000 from the Reconstruction Finance Corp.

This is to cover repairs to 10,000 steel box cars and 3000 automobile box cars, with permission to substitute 4000 hopper and 1000 stock cars for 2500 of the box cars and to substitute locomotive repairs for the hoppers. Box car repairs are estimated to average $150 each, automobile cars $300 each, locomotives at $9000 each. Work will be done in the road's own shops, employing 1500 men seven or eight months.

No freight cars were placed with builders in October. Figures for preceding months are as follows:

	1932	1931	1930	1929
Jan.	159	100	5,072	13,196
Feb.	35	50	17,027	15,944
March	105	2,166	6,118	12,023
April	0	2,798	1,997	8,205
May	60	20	1,392	7,562
June	0	1,910	998	5,886
July	25	617	1,389	341
Aug.	5	1,304	1,111	2,854
Sept.	1,298	703	576	4,517
Oct.	0	980	4,116	19,506
10 mo.	1,687	9,648	39,796	90,034
Nov.	.....	35	2,621	6,361
Dec.	.....	11	2,729	9,710
Total	.....	10,694	45,146	106,105

Chicago — Few important orders have developed from railroads recently. Chicago Great Western took bids Nov. 1 on 200 steel hopper cars with alternate bids on dump cars, and is expected to place this order shortly. Formal inquiry has yet to appear for 300 additional cars for this road. Inquiry for 150 to 300 underframes for the Pacific Fruit Express still is pending and is expected to be placed soon. Union Pacific railroad is replacing 17 miles of 90-pound rails with 110-pound material in Colorado, but this necessitates no new rail buying. Rail orders generally are absent, releases received recently being for small lots against old orders. Purchases of other steel products for repair and maintenance work also are light and generally unchanged. Little hope is entertained of orders for large tonnages of rails before a more substantial betterment in financial condition of the carriers.

Philadelphia—Baltimore & Ohio opened bids on a steel tonnage, Nov. 3. Requirements for its carbuilding program were largely covered at the time it originally contemplated construction of 1000 freight cars, the steel being ordered for fabrication by a carbuilder. The 835 cars or so now being discussed for construction are a part of the original program for 1000, which later was held up.

The requirements for the Baltimore & Ohio's program for repair to 2500 freight cars and a substantial number of locomotives have not been definitely ascertained. These requirements, with those for the 500 cars to be repaired by the Norfolk & Western and those still active for the Reading repair program, represent the only important railroad specifications pending.

Pittsburgh — Repairs which the Norfolk & Western railroad will make in its Roanoke, Va., shops, call for about 1500 tons of steel plates. Inquiry is being circulated for this tonnage and in addition some important buying may result from the authorization of a loan of $2,500,000 to the New York Central railroad. This will benefit bolt, nut and rivet and lumber interests more than steel mills as it is to be spread out over repairs to 13,000 cars and work is of a light nature.

On a grouping of approximately 8000 tons of rails, the Edgar Thomson mill is rolling this week. There have been several fair inquiries for miscellaneous railroad steels and repair parts from various sources. Prices are unchanged on railroad steel products, with spikes 2.40c and tie plates $35 a ton.

Toronto, Ont.—Dominion Steel & Coal Co., Sydney, N. S., has been given an order for 150,000 tons of steel rails by the Canadian federal government.

The Algoma Steel Corp., Sault Ste. Marie, Ont., expects a rail order for the western division of the Canadian National railways.

Cleveland—Chesapeake & Ohio railroad has placed 135,000 screw spikes here. No rail orders have developed from carriers with headquarters here, and purchases are restricted to immediate car repair purposes. Some fabricators note a little demand for steel for railroad bridge repair.

Structural Shapes

Awards Are Lighter—12,000 Tons for Hudson River Bridge Active, with Federal Loan Approved — 3000 Tons Placed for Allegheny River Locks—States Taking Bids

STRUCTURAL SHAPE PRICES, PAGE 47

New York—Structural awards continue light, but requirements are growing gradually as the result of maturing state and government work. Bids are in on 1000 tons for the Staten Island viaduct and close to 3300 tons for viaducts and bridges in New Jersey. Bids on the Archives building, Washington, 8000 tons, have been postponed to Nov. 10.

A substantial tonnage of steel piling may be required by the war department for a waterfront development at Constable Point, Bayonne, N. J.

Boston—Close to 1000 tons are active for bridges in New England. Fabricated material prices are easy.

Philadelphia—Bids will be opened Dec. 5 on the proposed naval hospital here, for which a substantial tonnage of shapes will be required. Buying generally continues light. Shapes are 1.70c nearest mill.

Buffalo—New inquiries are noted for a total of 750 tons. The outlook is more encouraging as several large projects are likely to be awarded to general contractors within the next three or four months. No important increase in operations at fabricating plants in this district has been reported recently.

Pittsburgh—About 3000 tons of steel sheet piling in 22-pound sections for temporary installation in locks No. 2 and No. 3, Allegheny river, has been placed with two producers. Several thousand tons of car shapes have been purchased by the Pennsylvania railroad from district mills. Small lots of plain material are based on 1.60c, Pittsburgh, but fabricated prices reveal concessions.

Cleveland—Another Ohio state letting for Nov. 18 includes 400 tons for a Trumbull county bridge, while approximately 1400 tons are pending on the state awards of Nov. 4. A few small industrial projects are being figured. Railroads are buying small quantities of material for bridge repairs. Plain shapes are 1.60c, base, Pittsburgh.

Chicago—Less business is in prospect than at any time during the past several months. Awards are restricted almost entirely to small highway bridges. Several Illinois bridges each involving more than 1000 tons remain to be placed.

Contracts Placed

3000 tons, steel sheet piling, for temporary installation, locks No. 2 and No. 3, Allegheny river, to L. B. Foster Co., Pittsburgh; through Vang Construction Co., Pittsburgh. Jones & Laughlin Steel Corp., Pittsburgh, awarded 2000 tons, and Carnegie Steel Co., Pittsburgh, 1000 tons.

950 tons, highway bridge, Kern river, Bakersfield, Calif., to McClintic-Marshall Corp., Bethlehem, Pa.

650 tons, Paterson Park school, Baltimore, to Armstrong & Parker Co., Baltimore.

450 tons, highway bridgs, Nebraska, to Omaha Steel Works, Omaha, Nebr.

450 tons, bridges, Jefferson county, Oklahoma, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

450 tons, bridges, Laclede and Cape Girardeaux counties, Missouri, to Stupp Bros. Bridge & Iron Co., St. Louis.

440 tons, community house, Madison, N. J., to McClintic-Marshall Corp., Bethlehem, Pa.; through William Crawford Co., New York, contractor.

400 tons, federal building, World's fair, Chicago, to Hansell-Elcock Co., Chicago.

375 tons, bridge, Rabia, Okla., to Muskogee Iron Works, Muskogee, Okla.

350 tons, glass plant for Owens-Illinois Glass Co., Clarion, Pa., to Pittsburgh Bridge & Iron Works, Pittsburgh.

330 tons, high school, Malverne, N. Y., to George A. Just Co., Long Island City, N. Y.; through William Kennedy Construction Co., New York, contractor.

325 tons, bridge, Jackson county, Missouri, to Kansas City Structural Steel Co., Kansas City, Mo.

325 tons, bridges, New Mexico and Wyoming, to American Bridge Co., Pittsburgh.

285 tons, state highway bridge, Ulster county, New York, to Lackawanna Steel Construction Corp., Buffalo; through De Lucca Bros., New York, contractor.

275 tons, highway bridge, Gladstone, Ill., to Illinois Steel Bridge Co., Jacksonville, Ill.

250 tons, channels, for barge for New Jersey Clay Products Co., South River, N. J., to unnamed interest; through United Dry Docks Inc., New York.

250 tons, highway bridge, La Plata, Md., to McClintic-Marshall Corp., Bethlehem, Pa.

234 tons, Hat creek and Pitt river bridges, Shasta county, California, to Moore Drydock Co., Oakland, Calif.

200 tons, highway bridge, Burlington county, New Jersey, to McClintic-Marshall Corp., Bethlehem, Pa.

200 tons, bridge, Millstone, Mont., to Minneapolis-Moline Power Implement Co., Minneapolis.

180 tons, transmission towers, San Rafael and Sunnyvale, Calif., army bases, to Pacific Coast Steel Corp., San Francisco.

165 tons, home planning building, World's fair, Chicago, to Duffin Iron Co., Chicago.

150 tons, postoffice, Williamsport, Pa., to McClintic-Marshall Corp., Bethlehem, Pa.

110 tons, postoffice, Billings, Mont., to unnamed interest; W. D. Lovell, Minneapolis, general contractor.

107 tons, highway bridge, St. Clair county, Illinois, to McClintic-Marshall Corp., Bethlehem, Pa.

Awards Compared

	Tons
Awards, week, ended Nov. 5	**8,201**
Awards, week ended Oct. 29	**11,657**
Awards, week ended Oct. 22	**90,263**
Awards, this week in 1931	**19,491**
Av. weekly awards, 1931....	**34,236**
Av. weekly awards, 1932..	**16,437**
Av. weekly awards, Oct.....	**29,641**
Awards, to date, 1931.....	**1,634,673**
Awards, to date, 1932.....	**739,691**

Contracts Pending

12,000 tons, cantilever and suspended spans at Catskill, N. Y. Loan of $3,400,000 approved by Reconstruction Finance Corp., conditional on state legislation.

2500 tons, three incinerators, Manhattan, Bronx and Queens, New York. Former bids rejected, to be readvertised.

1500 tons, powerhouse, Potomac Power Co.; Stone & Webster Inc., Boston, asking bids.

1500 tons, appraiser's store, Baltimore.

708 tons, state bridges, St. Tammany parish, Louisiana; bids soon.

440 tons, two 270-foot truss spans for state, Warren county, Pennsylania; bids at Harrisburg, Pa., Nov. 18. Included, 30 tons of plain steel bars.

400 tons, state bridge, Trumbull county, Ohio; bids at state highway department, Columbus, O., Nov. 18.

400 tons, postoffice, Wilkes Barre, Pa.; Weinstein Construction Co., Akron, O., general contractor.

318 tons, bridge in Utah county, Utah; bids Nov. 4.

300 tons, bridge over Missouri river, Wolfe Creek, Montana.

275 tons, highway bridge, Chester, Ill.

250 tons, Sylvania Corp. plant, Fredericksburg, Va.

250 tons, highway bridge, Sesser, Ill.

227 tons, 5-span deck girder bridge for state, Washington county, Pennsylvania; bids at Harrisburg, Pa., Nov. 18.

213 tons, state bridge, San Diego county, California; bids Nov. 9.

180 tons, business building, Broad and Susquehanna, Philadelphia; specifications out shortly.

167 tons, 1590-foot truss bridge for state, Forest county, Pennsylvania; bids at Harrisburg, Pa., Nov. 18. Included, 24 tons of plain steel bars.

150 tons, state bridge, Lancaster county, Pennsylvania; bids at Harrisburg, Pa., Nov. 18.

150 tons, viaduct over Texas & Pacific and Frisco railroads, Fort Worth,

Tex.; Bellows-Maclay Construction Co., Dallas, Tex., general contractor.

146 tons, state bridges, Johnston county, Oklahoma; bids Nov. 1.

120 tons, bridge over Pennsylvania railroad, Metuchen, N. J.

115 tons, crossing over Western Pacific railroad, Salt Lake county, Utah; bids Nov. 2.

108 tons, state bridges, Carter county, Oklahoma; bids Nov. 9.

100 tons, crossing over Denver & Rio Grand railroad, Utah county, Utah; bids Nov. 4.

100 tons, courthouse, Beaver, Pa.

Unstated tonnage, naval hospital, Philadelphia; bids to be opened Dec. 5.

Unstated tonnage, $1,500,000 union station, Atlantic City, N. J.; work on plans to begin shortly. Pennsylvania and Reading railroads interested.

Wire Demand Barely Holds, with Price Steady

Wire Prices, Page 47

Chicago—Demand for wire products from agricultural districts continues slow and seasonally quieter than during September. Specifications from industrial consumers are spotty and improvement has been confined to small lots. A seasonal decrease in total shipments is looked for during November. Prices are unchanged and generally steady.

Worcester, Mass — Miscellaneous demand for wire holds its recent pace, but with practically no gains, except in the case of some specialties. Call for wire rope has slumped. Prices on practically all wire products are firm, although nails are shaded. Manufacturers' wire is dull for this period.

Buffalo—Demand for wire products has been improving steadily for several weeks, and rod and wire production here is much better than during summer and early autumn. Offerings of foreign poultry netting continue to perplex American manufacturers, it is reported.

Pittsburgh—Infrequency of wire and nail orders is attributed to desire to maintain low inventories until after election. Jobbers are perhaps the slowest buyers. Quotations are firmly held, with domestic mills quoting $1.95 minimum for nails and base of 2.20c for plain manufacturing wire. One mill moved several carloads of nails last week at $1.95, Pittsburgh.

Republic Steel Corp. has booked 400,000 wire rope clips at $21,200, delivered, for the United States engineer at Memphis, Tenn., and Truscon Steel Co. has booked 100,000 at $5947, delivered.

Manhattan Coal Carburetor Co., New York, has increased its capital from $5000 to $50,000.

Concrete Bars

Substantial Tonnages Pending, but Orders Decline—General Contracts in Chicago District Call for 2000 Tons—1000 Tons Up for Mississippi River Projects

REINFORCING BAR PRICES, PAGE 47

New York—Reinforcing steel lettings are smaller, but a good volume is pending, largely for state hospital work. Additional mesh requirements for New Jersey and New York state are active. Mesh prices are unsettled, and some shading of the 1.60c, Pittsburgh, price on billet bars is also reported.

Boston—Reinforcing steel requirements still are largely for bridges and highways. Foreign material tends to weaken the market.

Philadelphia—A substantial tonnage of reinforcing bars will be required for the naval hospital, on which bids will be opened on Dec. 5. It appears now that the customs house here will take close to 700 tons. Billet steel bars are unchanged at 1.55c, Pittsburgh, in cut lengths; and rail steel bars, around 1.35c, eastern mill.

Pittsburgh — Bids for another Pennsylvania state highway letting go in Nov. 18, at Harrisburg, Pa., requiring approximately 300 tons of reinforcing bars. New billet steel is 1.60c for small orders, but larger lots bring out concessions.

Chicago—Inquiry has declined and practically the only pending work of importance is for Illinois highways. General contracts involving more than 2000 tons of bars are being distributed, bar orders to be placed later. Nearly 1000 tons will be required for three Mississippi river lock and dam projects for which bids on general contracts have been taken.

Cleveland — General contracts were awarded by the state Nov. 4 for bridges for which approximately 700 tons of concrete bars will be required. The date for taking bids for the Brook Park bridge, Cuyahoga county (Cleveland), O., requiring 1000 tons, has been set by the state for Nov. 22. Small jobs are fairly numerous. Though the nominal price of new billet steel bars is 1.50c, Cleveland mill, 1.45c is the more general price to fabricators.

Awards Compared

	Tons
Awards, week ended Nov. 5	**2,388**
Awards, week ended Oct. 29	**4,317**
Awards, week ended Oct. 22	**9,637**
Awards, this week, 1931	**7,130**
Av. weekly awards, 1931	**6,808**
Av. weekly awards, 1932	**4,228**
Av. weekly awards, Oct.	**5,397**
Awards, to date, 1931	**322,100**
Awards, to date, 1932	**190,247**

Contracts Placed

465 tons, state highway work in Santa Clara county, California, to unnamed interest.

325 tons, bridge over Tuloumne river, Modesto, Calif., to unnamed interest.

260 tons, overhead crossing Jefferson parish, Louisiana, to Truscon Steel Co., Youngstown, O.; Forcum Jones Co., Dyersburg, Tenn., general contraoctor. Latter to place 83 tons of structural shapes.

255 tons, Kern river bridge, Bakersfield, Calif. to unnamed interests.

225 tons, highways, Florida, to Truscon Steel Co., Youngstown, O.

170 tons, postoffice, Jamaica, N. Y., to Capital Steel Corp., New York; through Rego Building Corp., New York, general contractor.

130 tons, factory addition for the Sylvania Corp., Fredericksburg, Va., to Taylor-Davis Inc., Philadelphia.

120 tons, state road work, Coatesville, Pa., to the Kalman Steel Corp., Bethlehem, Pa.

118 tons, two bridges, emergency construction, highway project E-179-C, Greene and Morgan counties, Georgia, to Austin Bros. Bridge Co., Atlanta, Ga. Will let fabrication of 330 tons of structural steel for the work.

110 tons, two state bridges, Lincoln county, Oklahoma, to J. B. Klein Iron & Foundry Co., Oklahoma City, Okla.; W. G. Fike & Son, Tulsa, Okla., contractor.

105 tons, bars and shapes, nurses' home, St. Joseph's hospital, Denver, Colo.; 80 tons of bars, to Colorado Builders' Supply Co., Denver, and Denver Steel & Iron Co.; F. H. Cowell, Denver, general contractor.

100 tons, wire mesh for Los Angeles county, Calif., to unnamed interest.

Contracts Pending

424 tons, state bridges, St. Tammany parish, Louisiana; bids soon.

290 tons, building for W. K. Kellogg Co., Battle Creek, Mich.; Phelps Co., Battle Creek, general contractor.

180 tons, tunnel No. 1, Oqyhee project, Oregon-Odaho, near Nyssa and Adrian, Oreg.; bids Nov. 22, bureau of reclamation, Ontario, Oreg. Work also includes 400 tons of gates, hoists and other miscellaneous metal work.

178 tons, state highway work in Allegheny, Bedford, Forest and Warren

counties, Pennsylvania; bids at Harrisburg, Pa., Nov. 18.
169 tons, dental clinic, Indianapolis.
165 tons, mesh, route 21, section 2, Poinier street to Lafayette street, Newark, N. J.; bids Nov. 21. New Jersey state highway commission, Trenton.
142 tons, viaduct over Texas & Pacific and Frisco railroads, Fort Worth, Tex.; Bellows-Maclay Construction Co., Dallas, Tex., general contractor.
110 tons, reinforced concrete approaches 5-span deck girder bridge for state, Washington county, Pennsylvania; bids at Harrisburg, Pa., Nov. 18.
Unstated tonnage, naval hospital, Philadelphia; bids Dec. 5.

Steel and Metal Trades Employment Up in September

September's index for employment in the iron and steel industry, and their products, not including machinery, as grouped by the bureau of labor statistics, Washington, was 51.8, compared with 50.8 in August and 67.2 in September last year. The payroll index was 24.2, against 23.1 in August, and 44.2 in September a year ago.

For iron and steel manufacturing industries, the employment index was 51.3, compared with 50.4 in August. In September, 1932, the index was 65.6. The payroll index was up from 19.5 in August to 20.4 in September, in contrast with 40.4 a year ago. Slight reductions were reported in the September employment indexes for cast iron pipe manufacture, and structural steelwork.

Business is Better

Reports of metal trades employment for September show the first gain for two consecutive months since August, 1929, according to the National Metal Trade association in Chicago. The September increase was 0.4 per cent, putting employment at 50.5 per cent, based on the monthly average of 1925-1927.

□ □ □

Largely due to less-carload shipments of steel products, river freight shipments from the Pittsburgh district to down-river points so far in 1932 are one-third larger than in 1931.

□ □ □

Pittsburgh Coal Co., Pittsburgh, has reopened mines at Arnold and Moon Run, Pa., recalling 1000 employes.

Stewart J. Cort, general manager of the Sparrows Point, Md., plant of the Bethlehem Steel Co., is a member of the share-the-work movement for the Baltimore district.

Pipe

Outlook for Federal-Loan Projects Brighter—Toledo-Detroit Line May Take 3500 Tons

PIPE PRICES, PAGE 64

Chicago—Occasional inquiries for small lots of cast pipe are appearing in a period normally the quietest of the year. Sellers anticipate little business in the winter, particularly in view of the fact utilities generally have suspended construction work. Hartland and Campbellsport, Wis., are taking bids on about 750 tons of pipe. Wilmette, Ill., will close bids Nov. 15 on its waterworks construction program requiring 800 tons. Recent orders usually involve carload lots and less.

Boston—Cast pipe volume is small, buying being largely for small fill-in lots. Utilities are taking little pipe.

New York—Cast pipe buying and inquiry is light, with prices firm at $30 to $32, eastern foundry. Bids have been withdrawn on the Wingdale, N. Y., state hospital, holding up 1000 tons. Tonnage for White Plains, N. Y., will be heavier than expected, approaching 1000 tons, placed with the Emaus, Pa., foundry. Some 48-inch pipe is required for Westchester county, New York, sewer work on which bids are in.

Pittsburgh—Standard pipe is leading minor improvement in the market, demand for oil country goods having fallen off. New seamless boiler tube discounts are now generally being applied and have had the effect of driving the small orders to the jobbers instead of the mills. Wheeling Steel Corp. started a lap welded mill at Steubenville, O., and a lap and butt weld mill at the Benwood, W. Va., works, the middle of last week.

Cleveland—Action by the Reconstruction Finance Corp., authorizing loans, indicates Bowling Green, Ky., will be in the market shortly for 275 tons of cast pipe for a sewer system, and Amherst county, Virginia, for 450 tons or more of cast pipe. The Hickok Oil & Gas Co., subsidiary of the Pure Oil Co., Chicago, is contemplating an 80-mile, 6-inch gas line from Toledo, O., to Detroit, which would require approximately 3500 tons. Miscellaneous pipe demands here are light.

Birmingham, Ala.—Fairly good orders for cast pipe came to this district during the week from Los Angeles and St. Louis. These orders, reported previously from the cities placing them, amounted to approximately 6700 tons. Further government financing indicates a growing market for municipal projects.

Cast Pipe Placed

130 tons, gas utility, New Jersey, to Donaldson Iron Works, Emaus, Pa.
60 tons, 12-inch for Fond du Lac, Wis., to Glamorgan Pipe & Foundry Co., Lynchburg, Va.

Cast Pipe Pending

3400 tons, sewer system in Shades valley, Jefferson county, Alabama.
1800 tons, dam and water system, Hobart, Okla. Purchase of $250,000 bonds authorized by Reconstruction Finance Corp.
500 tons, 4, 6 and 8-inch, class C, for Hartland, Wis.; bids Nov. 5.
450 tons, or more, Madison Heights sanitary district, Amherst county, Virginia. Purchase of $62,500 bonds authorized by Reconstruction Finance Corp.
275 tons, sewer system, Bowling Green, Ky. Purchase of $630,000 city bonds authorized by Reconstruction Finance Corp.
250 tons, 6 and 8-inch for Campbellsport, Wis.; bids Nov. 4.

Steel Pipe Placed

500 tons, 4½-inch, Consolidated Gas, Electric & Power Co., Baltimore, to Bethlehem Steel Co., Bethlehem, Pa.
101 tons boiler tubes, United States engineer, Memphis, Tenn.; 35,000 pounds to Greene-Wolfe Co., New York, $1917.71 f.o.b. South Lyon, Mich.; and 167,500 pounds, Reichman-Crosby Co., Memphis, $7186.95, f.o.b. Milwaukee.

Steel Pipe Pending

3500 tons, 6-inch gasoline pipe, Toledo, O., to Detroit, for Hickok Oil & Gas Co., subsidiary of Pure Oil Co., Chicago.
100 tons, 3-inch and under, galvanized steel or wrought iron, including 3100 feet 4-inch and under, extra strong black, Panama; bids Nov. 11.

Increases Welder Output

Harnischfeger Corp., Milwaukee, has increased production to build up inventories of arc welders and hoists. Recent orders include a crane for garbage handling for Baltimore and a coal-handling crane for the Wisconsin Ice & Coal Co., Milwaukee. Three arc welding units have been ordered by firms in Mexico.

Seattle business men have formed an organization to protect industry in the Northwest from foreign dumping, due to depreciated foreign currencies. Steel and iron are included.

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HOT AND COLD ROLLED
-- in all tempers

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Since 1897 we have specialized in high quality Hot and Cold Rolled Strip Steel, which constantly met the increasing requirements in this field.

A wide range of high and low carbon strip steel in all tempers—widths from ¾" to 24"—hot and cold rolled —coiled or cut to lengths that best suit your needs.

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Strip

Automotive Buying Gives Some Help but Other Consumers Show No Increase

STRIP PRICES, PAGE 47

Pittsburgh—Strip production was over 25 per cent last week as mill operations continued to be sustained on day-to-day orders. Buying has been augmented by fair releases from several automobile accounts. First quarter 1933 inquiry is expected from a few customers within another week. Cold-rolled strip is general at 2.00c and hot-rolled at 1.45c, Pittsburgh.

Philadelphia—Strip sellers report a poor week. Cold-rolled strip is unchanged at 2.00c, Pittsburgh, and hot strip at 1.45c.

Cleveland — Automotive strip releases have increased considerably, mainly from Chevrolet, six mill interests sharing in this company's tonnage for November production. Aside from these requirements, demand is moderate. Hot-rolled strip is 1.45c, base, Pittsburgh, to large buyers; and 1.50c, for small, miscellaneous lots. Cold-rolled is firmer at 2.00c, base, Cleveland, some sellers recently quoting 1.90c, now holding to this price.

Chicago — Automotive requirements for strip steel are improving at a slow rate and little change is noted in specifications from other consumers. Total business is fairly steady, with production continuing slightly below 15 per cent. Prices are unchanged, usually being 1.55c, Chicago, for hot strip and 2.00c, Pittsburgh-Cleveland, for cold-rolled strip.

Steel Producing Rate Goes To 21; May Rise Again

Pittsburgh—Steel ingot production was up two points last week to 19 per cent, due to sustainment of a 20 per cent rate in one leading mill and advancement of several points by the other leading interest. Operations in three independent mills are averaging 20 per cent of ingot capacity. The 19 per cent rate will be maintained this week with resumption at the Edgar Thomson rail mill Nov. 6, countering an expected minor decline in other mill open-hearth departments. There are still 9 out of 53 steelworks blast furnaces blowing, four belonging to Carnegie and five to three independents.

Buffalo—Steelmaking operations held unchanged last week at 19 per cent instead of being staggered, and by the middle of this week may reach 22 per cent. Seven open hearths were operating on Nov. 5 and an eighth was being made ready. Abandonment of staggered operations brings production to a rate unequalled since early summer. Executives hope to maintain at least a 20 per cent rate until Thanksgiving.

Philadelphia — Eastern steelmaking operations are fractionally easier, 13 to 14 per cent. The immediate outlook is uncertain.

Youngstown, O.—Operations in this district last week were at 19-20 per cent, up half a point, and were expected to hold at that level this week, unless the outcome of the election affects policies of mill schedule makers. Of 83 open hearths in the district 24 are melting.

Operations, week ended Nov. 5	**21**
Operations, week ended Oct. 29	**19.5**
Operations, week ended Oct. 22	**19.5**
Operations, one year ago	**30.5**
High for 1932, Feb. 6	**28.5**
Low for 1932—July 9	**12**

Cleveland—Steel ingot production here for the week ended Nov. 5 was at 33½ per cent, up from 26 per cent in the week preceding, and may be raised to 38 per cent this week. Otis Steel Co. began last week by lighting two additional open hearths, thus operating four. American Steel & Wire Co. increased its active units from three to four on Nov. 3. Corrigan, McKinney Steel Co. continued with four active, but is planning to light another unit Nov. 7.

Chicago—Ingot production was continued the past week at 18 per cent. Mills see little prospect of early improvement. Blast furnace schedules are unchanged, eight of 36 steelworks stacks being active. Pig iron production in October was the heaviest since July. Operations of finishing mills continue fairly steady.

Birmingham, Ala.—Steel operations are a point easier at 23 per cent.

Tungsten Mines Co., of which O. M. Kimmel is superintendent, has resumed work at its Blue Goose property in the Deer Park Washington district of Colorado.

Warehouse Buying Makes Slow Gain in Volume

Warehouse Prices, Page 64

New York—With the exception of one or two jobbers reporting a slight improvement thus far in November, warehouse volume shows little change. Price weakness in spots is noticeable, sheet prices being unsteady since the recent reduction to 3.50c on galvanized.

Boston—Sheet prices are unsteady in the warehouse market, with No. 10 blue annealed now 2.90c on 15,000-pound orders. Lack of large orders generally is holding back the jobbers' volume, although small orders are fairly numerous.

Philadelphia—October showed the first general improvement in warehouse trading in almost five months. While the improvement was slight in actual tonnage, it represented a fair percentage gain in most cases. Prices are unchanged, with foreign offerings less in evidence than recently.

Pittsburgh—Warehouse steel sales show no leveling off as in mill tonnage the past week. November so far is better for local jobbers than October. Prices are unchanged.

Detroit—Warehouse sales of iron and steel appear to be holding the noteworthy improvement of September, which October bettered slightly. The resumption of many manufacturers on new models prompts an occasional warehouse requirement. Prices generally are unchanged.

Cincinnati—Small, diversified orders so far this month were in improved volume, jobbers report. Inquiries also have been more numerous. Prices are steady.

Chicago—October sales showed a small increase over those of September, both in number of orders and tonnage. A seasonal decrease is looked for during November. Prices are steady.

St. Louis—While business of iron and steel warehouses subsided somewhat during the last half of October, volume for that month was about equal to September. All interests report considerable spottiness and irregularity.

Discovery of stone mining implements at Broken Hill, Rhodesia, supports the theory that during the stone age South Africa supplied Egypt with manganese, principally for use in cosmetics.

RAW MATERIAL PRICES

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Asterisk denotes price change this week

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$15.50
Pittsburgh, dist. fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.00
Philadelphia, delivered	13.51 to 13.76
Virginia furnace	17.25
Granite City, Ill., fur.	16.50 to 17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	18.91 to 19.91
Buff., all-rail, Brooklyn	18.90
Buff., all-rail, Newark	17.28
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	15.75 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	19.40
Buffalo, all-rail, Newark	17.78
Buff., all-rail, Boston	19.91 to 20.91
Virginia furnace	17.75
Eastern, del. Phila.	14.01 to 14.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	14.51 to 14.76

MALLEABLE

Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.00
Pittsburgh dis. fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Chicago, furnace	15.50
Buffalo fur., local del.	16.50
*Eastern Penna., delivered	14.63 to 18.91
Granite City, Ill., fur.	16.50 to 17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	14.00
Pittsburgh, delivered	14.63 to 15.13
Eastern Penn., del.	13.50
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	14.00

BESSEMER

Valley furnace	14.50 to 15.00
Pittsburgh, furnace	15.00
Pittsburgh, delivered	15.63 to 16.13

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	14.00
Pittsburgh district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19; 15—$21 to $23.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

BEEHIVE OVENS

Connellsville furnace	$1.90 to 2.10
Connellsville foundry	2.75 to 4.25
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.21 to 8.81
Chicago, ovens, outside del.	7.00
Chicago, del.	7.75
New England, del.	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.50
Indianapolis, del.	7.75
Ashland, Ky., ovens, Connell., basis	4.50
Portsmouth, O., ovens Connell., basis	4.50
Buffalo, ovens	7.50 to 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania New Jersey furnaces

(Nominal)

Foundry and basic, 56-63%, contract	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

(Nominal)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.50 to 9.00
North African low phos.	7.50 to 8.50
Swedish basic, 65%	7.50 to 8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.00
Newfoundland fdy., 55%	8.00
Tungsten, spot, short ton unit, duty paid	$10.00 to 10.25
Chrome ore, 48% gross ton c.i.f.	$17.00 to 18.00

Manganese Ore

(Nominal)

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55%	24 cents
South African, 52%	22 to 23 cents
South African, 49-51%	21 to 22 cents
South African, 44-47%	20 to 21 cents
Indian, 48-50%	22 cents
Brazilian, 46-48%	18 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$35.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	$35.00
Joliet and East Chicago	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

Burned, 9 x 4½ x 2½	$61.50
Unburned, 9 x 4½ x 2½	52.00

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$26.00
Pittsburgh, bessemer	26.00
Youngstown	26.00
Cleveland	26.00
Philadelphia	31.75
*Chicago	26.00
*Forging, Chicago	31.00
Forging, Pittsburgh	31.00
Forging, Philadelphia	35.75

SHEET BARS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00
Chicago	28.00

SLABS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	38.00

SKELP

All grades, Pittsburgh	1.50c to 1.60c

Ferroalloys

(In dollars, except Ferrochrome)

Ferromanganese, 78-82%, tidewater, duty paid	$68.00
Ferromanganese, del. Pittsburgh	73.24
Spiegeleisen, 19-20%, domestic fur. spot†	25.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(The above for spot carlots. Contract price $5 a ton less).	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis; 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic per ton carload, 23-26% f.o.b. Anniston, Ala.; 24%, $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60 per cent. per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molybdate, lb. cont.	0.80

†Carloads. Differentials apply to quant.

Fluorspar

85 and 5 per cent grade

Washed gravel, f.o.b. Ill., Ky., net ton car loads	$12.00
Washed gravel, import duty paid tide, gross ton	13.50

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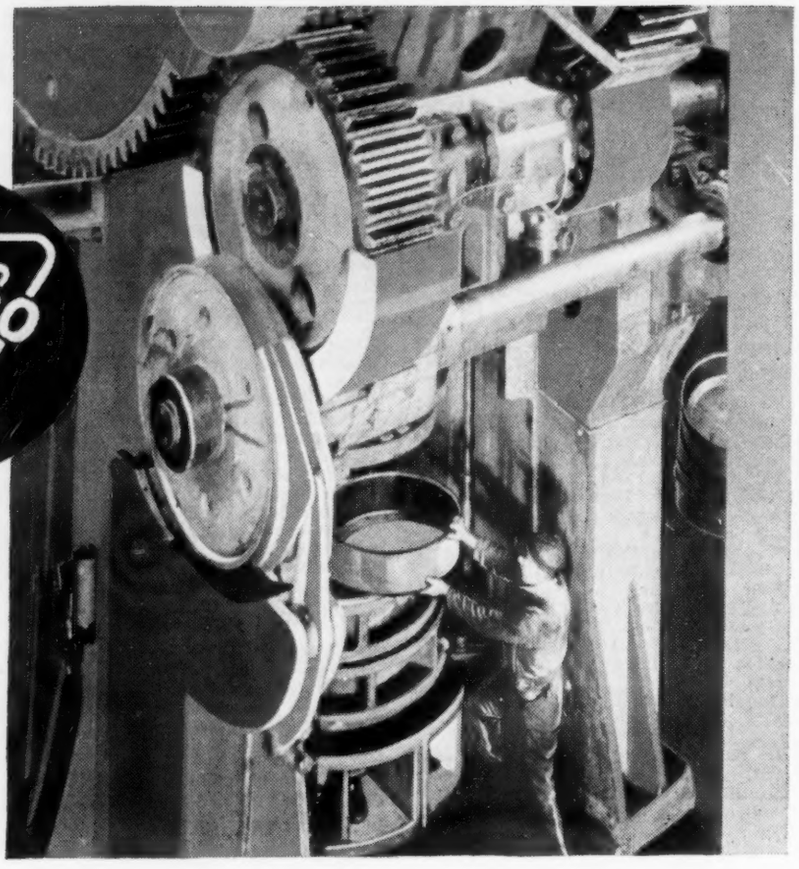

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Pig Iron

November Releases Awaiting Election Outcome — October Shipments Show Good Gains

PIG IRON PRICES, PAGE 55

Pittsburgh—Almost complete inactivity is noted in the pig iron market. Seasonal influences are responsible for good activity at radiator plants. One plant at Johnstown, Pa., has been operating two shifts, seven days a week. Prices are nominally $15 for foundry, bessemer and malleable irons, but there is no demand locally for bessemer, with steel foundries inactive. Cleveland furnace competition is sharp, a recent small inquiry from a consumer at Avonmore, Pa., being quoted $14.71, delivered, for some low silicon iron.

Boston—Sales and inquiry for pig iron are light, the former being under 1000 tons for the week, mainly in small lots, with the local maker taking a fair share despite the fact its price of $16, furnace, is a disadvantage. Eastern Pennsylvania iron is offered as low as $16.50, delivered at some points. Foreign iron, especially Dutch, fluctuates as to delivery point, but in southern New England $14, delivered, and under, is reported. Indian iron also is offered under $15, dock.

New York—Current buying is comprised almost entirely of carlots. Buffalo iron for delivery in this district is $14 base, furnace. Eastern Pennsylvania iron is around $13, furnace.

Philadelphia—Recent reports of the sale of 6000 tons of basic by an eastern Pennsylvania furnace have been confirmed. Both basic and foundry iron are unchanged at $13.50, delivered eastern Pennsylvania, and $12.75 to $13, furnace, respectively. Malleable iron has been reduced to a spread of $14.63 to $18.91, delivered.

Buffalo—Inquiry is restricted to lots of 200 tons and less, but shipments on orders are proceeding at a satisfactory rate. The local melt at present is higher than the average for the third quarter.

Cincinnati — Shipments on contracts have not slackened appreciably. Manufacturers of heating equipment report good operations.

Cleveland—Furnace interests have been unable to get an accurate gage on pig iron shipments for November, as in numerous instances releases have been held back pending the result of the election. As previously noted, October shipments were substantially higher than those of September, but there is nothing yet to indicate the trend for the current month. The movement last week showed a slowing tendency, and sales also dropped, to approximately 3000 tons. Prices are unchanged.

Chicago—Pig iron has retained practically all of the recent gains and shipments give indications of further improvement during November. October shipments were more than double those of August, with automotive requirements broadening gradually. Manufacturers of heating equipment are slightly less active, and the farm implement industry has placed little business. Prices are steady at $15.50, furnace, for No. 2 foundry and malleable.

Birmingham, Ala.—New orders do not equal current output, four stacks producing foundry iron, and one basic.

St. Louis—The leading local pig iron producer which recently blew out its stack, reports a reduction of 30,000 tons in stocks during the past two months.

Toronto, Ont.—Merchant pig iron sales fell off slightly in the past week, after steady buying in preceding weeks when melters accumulated supplies. Prices are firm.

Ferromanganese Slower; Prices Are Unchanged

Ferroalloy Prices, Page 55

Ferromanganese specifications are lighter, following a slight improvement in October. The market continues unchanged at $68, duty paid. Spiegeleisen, 19 to 21 per cent, holds at $25, furnace.

October Ore Shipments Up; Season Near Close

Iron Ore Prices, Page 55

Cleveland—Lake Superior iron ore shipments in October amounted to 926,561 tons, compared with 641,228 tons in September. Total for the season to Nov. 1 is 3,317,716 tons. As the majority of shippers are planning to move their last cargoes about the middle of November, the total for the season will be close to 3,500,000 tons. Occasional small orders for fill in lots are noted.

Coke

Movement to Foundries Well Sustained — Larger Demand Noted for Domestic Grades

COKE PRICES, PAGE 55

Pittsburgh—Foundry coke is being ordered in better volume, generally at $4.25 for premium brands. A little business in by-product foundry coke is going at $2.75. Activity in furnace coke is low, with the price holding around $1.90 to $2. One coke interest moved more than 150 cars of various grades in October above its September total.

Boston—The gain in foundry coke shipments last month was substantial, and the rate is holding thus far in November. The price is unchanged at $10, delivered.

Cincinnati—Total shipments of by-product coke are much better, but there is little improvement in foundry grades. Prices are unchanged.

New York—Manufacturers of heating units continue the principal recipients of metallurgical coke. Beehive furnace coke is $1.50 to $2, and $2 to 2.15, Connellsville, respectively, for heating and smelting purposes. Beehive foundry coke is $2.75 to $4.25, western Pennsylvania ovens; and by-product foundry coke, $8.21 to $8.81, delivered Newark, N. J.; $10, New England; and $8.50, Philadelphia.

Chicago—By-product coke shipments are expanding steadily, aided by a substantial increase in demand for heating coke, sales of which for some interests recently have been more active than a year ago. Foundry coke requirements increased during October and prospects for additional improvement this month are favorable. Foundry coke continues $7, ovens, for outside delivery.

St. Louis—Stove and jobbing foundries are the largest coke consumers at present. Shipment of by-product fuel in October averaged about the same as in September.

Birmingham, Ala.—Production has been increased slightly, mainly due to demand for domestic grades. No change is noted in foundry requirements.

Scrap

Light Buying Prevails and Prices Are Little Changed—Melters Not Covering Future

Chicago—Quiet predominates in the scrap market, recent orders involving only small lots. Purchases of heavy melting steel are limited to occasional small tonnages for local consumption, although a boatload of this grade involving 4000 to 5000 tons moved from Chicago late last week for eastern consumption. Prices generally continue steady, although some weakness is noted in cast grades and railroad malleable. Heavy melting steel holds at $5.75 to $6.

Boston—All grades of scrap are dull, even cast grades, which have been the most active. Prices are barely holding recent levels and in some instances are easier. While a barge or two is loaded for eastern Pennsylvania from time to time,

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	6.50 to 7.00
Boston, dealers	3.00 to 3.25
Buffalo, No. 1	7.50 to 8.00
Buffalo, No. 2	6.25 to 6.75
Chicago	5.75 to 6.00
Cleve., No. 1	7.00 to 7.50
Cleve., No. 2	6.00 to 6.50
Det., No. 1 deal.	5.75 to 6.25
Det., No. 2 deal.	4.50 to 5.00
E. Pa. del. mill	7.00 to 7.50
E. Pa., No. 2 del.	5.50 to 6.00
N. Y. deal. R. R.	4.50 to 4.75
N. Y. deal, No. 2	3.50
N. Y. deal. yd.	2.50 to 3.00
Pitts. No. 1	9.00 to 9.50
St. L. No. 1 sel.	6.00 to 6.50
Federal, Ill.	5.50 to 6.00
Granite City, Ill.	5.00 to 5.50
Valleys, No. 1	9.00 to 9.50

COMPRESSED SHEETS

Buffalo, dealers	6.25 to 6.75
Chi. (Factory)	4.50 to 5.00
Cleveland	6.50 to 7.00
Detroit, dealers	5.50 to 6.00
E. Pa. new mat.	5.00 to 5.50
Pittsburgh	8.75 to 9.25
Valleys	8.50 to 9.00

BUNDLED SHEETS

Buffalo	4.25 to 4.75
Cinci., del.	4.25 to 4.75
Cleveland	4.50 to 5.00
Eastern, Pa.	5.00
Pittsburgh	7.75 to 8.25
St. Louis	1.50 to 2.00

SHEET CLIPPINGS LOOSE

Chicago	2.00 to 2.50
Cincinnati	2.00 to 2.50
Detroit, dealers	2.00 to 2.50
St. Louis	1.50 to 2.00

STEEL RAILS SHORT

Birmingham	7.50 to 8.50
Boston, dealers	2.75 to 3.00
Buffalo	9.50 to 10.00
Chicago (3 ft.)	8.00 to 8.50
Chicago (2 ft.)	8.50 to 9.00
Cinci., del.	9.00 to 9.50
Detroit, deal.	8.00 to 8.50
Pitts. (open-hearth, 3 ft. and less)	10.00 to 10.50
St. Louis	7.50 to 8.00

STOVE PLATE

Birmingham	5.75 to 6.25
Boston, dealers	2.50 to 3.00
Buffalo	7.75 to 8.00
Chicago, net	5.75 to 6.25
Cinci., deal. net	3.50 to 4.00
Det., net deal.	3.00 to 3.50
Eastern Pa.	6.00 to 6.50
N. Y., deal. mill	2.50 to 3.00
St. Louis	5.50 to 6.00

COUPLERS, SPRINGS

Buffalo	9.00 to 9.50
Chicago	6.50 to 7.00
Eastern Pa.	9.00 to 9.50
Pittsburgh	9.25 to 9.75
St. Louis	6.00 to 6.50

ANGLE BARS—STEEL

Chicago	7.00 to 7.50
St. Louis	6.00 to 6.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	9.00 to 9.50
Cleveland bil. and bloom crops	10.00 to 11.00
Eastern Pa.	9.00 to 9.50
Pittsburgh billet bloom crops	10.50 to 11.00
Pitts., sheet bar crops	10.50 to 11.00

FROGS, SWITCHES

Chicago	6.00 to 6.50
St. Louis	6.00 to 6.50

SHOVELING STEEL

Chicago	5.75 to 6.00
Cleveland	5.75 to 6.00
St. Louis	5.00 to 5.50

RAILROAD WROUGHT

Birmingham	4.50 to 5.50
Boston, dealers	1.00 to 1.50
Buffalo, No. 1	4.50 to 5.00
Buffalo, No. 2	7.00 to 7.50
Cinci., No. 2	5.75 to 6.25
Chi., No. 1, net	5.00 to 5.50
Chicago, No. 2	5.75 to 6.00
Eastern Pa.	7.00 to 7.50
N. Y., No. 1, deal.	2.50 to 3.00
Pitts., No. 2	9.00 to 9.50
St. Louis, No. 1	3.50 to 4.00
St. Louis, No. 2	5.00 to 5.50

SPECIFICATION PIPE

Boston	3.00 to 4.00
Eastern Pa.	7.00 to 7.50
N. Y., deal	2.00 to 2.25

BUSHELING

Buffalo, No. 1	6.25 to 6.75
Chicago, No. 1	4.00 to 4.50
Cinn., No. 1 dl.	4.00 to 4.50
Cinn., No. 2	2.50 to 3.00
Cleve., No. 2	3.00 to 3.50
Det., No. 1 new deal	4.75 to 5.25
St. L., No. 1	3.00 to 3.50
Val. new No. 1	8.25 to 9.75

MACHINE TURNINGS

Birmingham	3.00 to 3.50
Boston, dealers	0.75 to 1.00
Buffalo	3.75 to 4.25
Chicago	3.00 to 3.50
Cin., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit	3.00 to 3.50
Eastern Pa.	3.50 to 4.00
N. Y., deal	1.35 to 1.50
Pittsburgh	6.25 to 6.75
St. Louis	1.50 to 2.00
Valleys	6.75 to 7.25

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	.75 to .90
Buffalo	3.75 to 4.25
Cinn., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit, deal.	3.50 to 4.00
Eastern Pa.	3.50 to 3.75
N. Y., deal	1.35 to 1.50
Pittsburgh	6.50 to 7.00

CAST IRON BORINGS

Birming., chem.	12.00 to 13.00
Birming., plain	3.00 to 3.50
Boston, chem.	5.50 to 6.00
Boston, dealers	1.00 to 1.25
Buffalo	4.25 to 4.50
Chicago	4.00 to 4.50
Cinn., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit, deal.	3.50 to 4.00
Eastern Pa.	3.50 to 3.75
E. Pa., chem.	8.00 to 10.50
N. Y., deal	1.00 to 1.50
Pittsburgh	6.50 to 7.00
St. Louis	2.75 to 3.25

PIPE AND FLUES

Cinn., deal.	3.25 to 3.50

RAILROAD GRATE BARS

Buffalo	4.00 to 4.50
Chicago, net	5.00 to 5.50
Cincinnati	4.00 to 4.50
Eastern Pa.	5.50 to 6.00
N. Y., deal.	3.50 to 4.00
St. Louis	4.50 to 5.00

FORGE FLASHINGS

Boston, dealers	2.00 to 2.50
Buffalo	5.50 to 6.00
Cleve. ov. 10 in.	6.00 to 6.50
Detroit	4.00 to 4.50

FORGE SCRAP

Boston, dealers	1.75 to 2.00
Chicago	7.00 to 7.50
Eastern Pa., del.	5.00 to 5.50

ARCH BARS, TRANSOMS

Chicago, net	5.00 to 5.50
St. Louis	5.00 to 5.50

AXLE TURNINGS

Boston, deal	5.50 to 6.00
Buffalo	6.50 to 7.00
Chi., elec. fce.	4.50 to 5.00
Cleveland	5.50 to 6.00
Eastern Pa., del.	7.00
Pittsburgh, O. H.	7.50 to 8.00
St. Louis	3.50 to 4.00

STEEL CAR AXLES

Birmingham	9.00 to 9.50
Boston, ship. pt.	6.00 to 6.50
Buffalo	10.00 to 10.50
Chicago, net	8.50 to 9.00
Eastern Pa.	14.50
St. Louis	9.00 to 9.50

SHAFTING

Boston, ship. pt.	6.50 to 7.00
N. Y., deal.	6.50 to 7.00
St. Louis	7.50 to 8.00
E. Penna.	11.00 to 12.00

CAR WHEELS

Birming., iron	7.00 to 7.50
Boston, iron deal.	3.50 to 4.00
Buffalo, iron	7.00 to 8.00
Buffalo, steel	8.50 to 9.00
Chicago, iron	7.00 to 7.50
Chi., rolled steel	6.50 to 7.00
Cincinnati iron	6.25 to 6.75
E. Pa. steel	9.00 to 10.00
E. Pa. iron	9.00 to 9.50
Pitts., iron	8.50 to 9.00
Pitts., steel	9.25 to 9.75
St. Louis, iron	5.00 to 5.50
St. Louis, steel	7.00 to 7.50

NO. 1 CAST SCRAP

Birmingham	6.50 to 7.50
Buffalo (Mach.)	10.00 to 10.25
Buffalo, cupola	9.00 to 9.50
Boston, textile	6.75 to 7.00
Boston No. 2	3.00 to 3.50
Chi., mach. net	6.00 to 6.50
Chi., railroad, net	5.50 to 6.00
Chicago, agri., net	5.25 to 5.75
Cinn., mach. cup.	7.00 to 7.50
Cleve. cupola	7.00 to 8.00
Det., net deal.	6.50 to 7.00
E. Pa. cupola	9.00 to 9.50
N. Y., cup. deal.	5.50 to 6.50
N. Y., del. local foundries	8.00 to 8.50
Pitts., cupola	9.50 to 10.00
San Fran., del.	13.50 to 14.00
Seattle	4.50 to 6.50
St. L. No. 1 ma.	6.50 to 7.00
St. L., No. 1	6.00 to 6.50

HEAVY CAST

Boston, del.	4.00 to 4.25
Bost., mach. cast	7.00 to 7.50
Buffalo, break	6.50 to 7.00
Cleve., break	4.50 to 5.00
Detroit, auto, net deal.	7.00 to 7.50
Det., break., dl.	4.50 to 5.00
Eastern Pa.	8.50 to 9.00
N. Y. No. 1, dl.	5.00 to 5.50
N. Y. break, dl.	4.75 to 5.25
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston Consum.	7.50 to 8.00
Buffalo	8.00 to 8.50
Chicago, agri.	5.00 to 5.50
Chicago, R. R.	6.00 to 6.50
Cinci., R. R., del.	7.50 to 8.00
Cinci., agri. del.	7.00 to 7.50
Cleveland, rail	7.50 to 8.00
Det. auto deal.	5.00 to 5.50
St. Louis, rail	4.50 to 5.00

RAILS FOR ROLLING

5 feet and over

Birmingham	7.50 to 7.75
Boston, deal.	5.00 to 5.50
Buffalo	7.00 to 7.50
Chicago	8.25 to 8.75
Eastern Pa.	9.50
New York dealer	4.25 to 4.75
St. Louis	7.25 to 7.75

LOCOMOTIVE TIRES

Chicago, cut	7.00 to 7.50
St. L., No. 1	5.00 to 5.50

LOW PHOS. PUNCHINGS

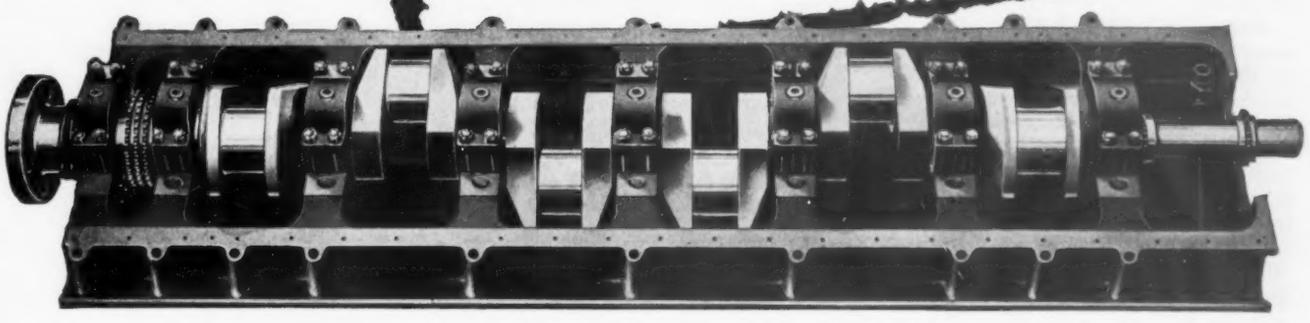
Chicago	7.50 to 8.00
Buffalo	9.00 to 9.50
Eastern Pa.	9.50 to 10.00
Pittsburgh	10.75 to 11.25

"Never A Broken Superior Crankshaft"

Never a broken Superior Crankshaft... a tribute to the correctness of design and excellence of construction of Superior Stationary Diesel Engines.

Superior crankshafts are forged from solid billets of vanadium steel, heat treated and machined all over. Shaft and crank pins are approximately 70 per cent of cylinder diameter.

—from an advertisement of Superior Engine Company, Springfield, Ohio.



"Forged from Solid Billets of Vanadium Steel"

UTMOST dependability is an inherent characteristic of all Vanadium - containing steels. A typical example is the performance record of Vanadium Steel in the crankshafts of Superior Engines.

If you are interested in stronger, tougher, more durable steels for vital parts of your product, or for your manufacturing equipment and tools, our Metallurgists will gladly send you complete data on Vanadium Steels that have demonstrated their dependability through many years of service. Write us.

VANCORAM

FERRO - ALLOYS of vanadium, silicon, chromium and titanium; silico-manganese, tungsten and molybdenum, produced by the Vanadium Corporation of America, are used by steel makers in the production of high - quality steels.

VANADIUM CORPORATION OF AMERICA

120 BROADWAY, NEW YORK, N. Y.

PITTSBURGH *Bridgeville, Pa.*

DETROIT *Book Tower*

Plants at Bridgeville, Pa., and Niagara Falls, N. Y.
Research and Development Laboratories at Bridgeville, Pa.

VANADIUM STEELS

for strength, toughness and durability

movement of scrap to outside points is light and New England buying is in small lots. There is some call for chemical borings at $5 to $6, delivered.

New York—Steel and iron scrap is marking time, with little new buying and limited shipments against contracts. The Bayonne mill, recently resuming buying of foundry stove plate, continues to take that grade, the dealer paying $4.50, barge. No. 1 steel is unchanged, with $4.50 to $4.75, barge, being paid, most at the inside figure.

Philadelphia—Scrap buying is listless. Prices are easy but unchanged. In several instances, shipments against orders continue suspended. No. 1 heavy steel is $7 to $7.50, delivered.

Buffalo—There is little interest in scrap, although stocks are said to be the lowest in months. Nominal price lists are unchanged, dealers here showing no disposition to follow recent price reductions in other territories. Scattered cars of No. 1 machinery cast have been sold locally at $10.

Pittsburgh—No 1 heavy melting steel is quiet, with several offers to steel mills as low as $9. The same inactivity prevails in other important scrap grades, although a large purchase of heavy breakable cast scrap was made last week by Allegheny Steel Co. at $8.25 for approximately 10,000 tons. Early this week, disposition of the 30,000-ton Pennsylvania list will be known. In spite of belief to the contrary, dealers had no difficulty in covering on their orders for Donora, Pa., shipment a week ago. Scrap appeared plentiful.

Cleveland—Only mark of activity in scrap in new buying in northern Ohio recently has been the sale of 240 tons of carwheels from the Baltimore & Ohio for Mansfield, O., delivery at $8.50, through a dealer. However, such material still brings $7 to $8 at Cleveland, with scanty business. Shipments of heavy steel to the Valleys on contracts continue at about $9 for No. 1 steel.

Detroit—Heavy breakable cast has been reduced 50 cents to a range of $4.50 to $5; otherwise the iron and steel scrap market here is unchanged. The market needs further buying to substantiate present prices. A slight increase in offerings of automobile scrap is noted, but the full effect of the resumption on new models will not be felt until December.

St. Louis—Inquiry and sales of iron and steel scrap continue light, particularly for distant requirements. For the past two or three weeks there has been a disposition to mark time. Mills are awaiting railroad and automotive business, and meantime handle accumulated orders at present limited active capacity.

Cincinnati—Although mills have been absorbing most grades of scrap iron and steel available at present prices, the buying interest of a few weeks ago has turned dull. Quotations are maintained fairly steadily.

Birmingham, Ala.—Inventories of scrap melters continue light and purchasing is only for current needs. No change in quotations is noted.

Toronto, Ont. — Minor improvement is reported in iron and steel scrap. While iron grades are most active, with a regular flow of small orders for machinery cast, renewed activity has recently appeared in steel grades. A slight spurt has developed in heavy melting steel, rails and axles, and some sales of car wheels have been made. Stove plate and malleable scrap are spotty. Dealers are picking up odd lots with expectation that better market demand will appear early next year. No changes have been made in prices.

Semifinished Steel Movement Is Expanding

Semifinished Prices, Page 55

Semifinished steel shipments from some important northern Ohio mills in October were two and a half times as large as those in September. Several consumers indicate they will inquire within the next week for first quarter coverage. Some talk is heard among producers of an increase in prices. Currently wire rods are firm at $37, Pittsburgh, sales of sheet bars, billets and slabs are made at $26. Rolled forging quality billets are quiet at $31.

Equipment

Sales Slow in East—Election Seen as Drag on Buying

New York — Inquiry for machine tool equipment has slumped to the point of stagnation with sales few, although some government contracts are being placed on inquiries, bids on which closed several weeks ago. A few orders for special tools are being taken, but in general the demand during the week has been the dullest in a long period. There has also been a slump in demand for parts. Some slight repair business is being done. Holders of used machinery are included in the inactivity, and despite low prices there is little used machinery moving. Board of transportation has bought part of its list issued some weeks ago.

Worcester, Mass.—Continued dullness in both inquiry and sales of machine tools keeps New England machine shops on curtailed schedules with few exceptions. Demand for parts is fair. Bids close Nov. 15 on a gate shear for the Boston navy yard, but the bulk of government business is outside the district.

Pittsburgh—Follansbee Bros. Co. Inc., Pittsburgh, placed an order last week with the Cold Metal Process Co., for a 38-inch Steckel cold strip mill. This will be installed at Follansbee, W. Va., in the present open-hearth division of the company which has housed four 35-ton basic open hearths, but which have not been in use for some time. There will be no new construction of mill buildings and the Follansbee company in the future will rely on its open-hearth capacity at Toronto, O. Baldwin-Southwark Corp., Philadelphia, a subsidiary of Baldwin Locomotive Works, is building the Steckel mill at its Philadelphia plant. The Follansbee company, at the time of purchase of this mill, has agreed with the Cold Metal Process Co. for one Steckel hot strip mill and ten additional cold strip mills which will eventually lead to the expenditure of over $2,000,000.

Cleveland — A pre-election quiet has accentuated the dullness of the machinery and equipment market, with sales scattered and for small amounts. A builder of turret lathes reports October business the best in 18 months, nearly all machines being for replacement purposes.

Chicago—Despite some hesitancy in closing on orders for machinery and plant equipment, the market continues to display considerably more activity than was true during summer months. October sales of one machine tool interest were the largest for the year to date and most reports regarding last month's business indicated some betterment. Inquiry remains fairly active, although recently there has been a tendency to postpone placing of orders until after the election. Indicative of a moderate increase in industrial activity is an increase in orders for individual machine tools, practically all of which are required for present operations. Sales of welders have been more active.

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.25c, Conn., for copper

SHEETS	
Yellow brass (high)	12.50
Copper, hot rolled	15.37½
Lead sheets, cut, to jobbers	7.00
Zinc sheets (100-lb. base)	9.00
TUBES AND PIPES	
Seamless yellow brass (high)	15.25
Seamless copper	14.37½
RODS	
Yellow brass (high, full turning)	10.25
Naval brass	11.37½
ANODES	
Copper, untrimmed	12.25
WIRE	
Yellow brass (high)	12.50

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	2.75 to 3.00
Chicago	2.25 to 2.50
Cleveland	2.50 to 2.75
St. Louis	2.50
HEAVY YELLOW BRASS	
New York	1.87½ to 2.00
HEAVY COPPER AND WIRE	
New York	3.50 to 3.75
Chicago, No. 1	3.25 to 3.50
Cleveland	2.75 to 3.00
St. Louis	2.75
COMPOSITION BRASS BORINGS	
New York	2.50 to 2.75
YELLOW BRASS TUBING	
Cleveland	1.50 to 1.75
LIGHT COPPER	
New York	2.87½ to 3.00
Chicago	2.25 to 2.50
Cleveland	2.25 to 2.50
St. Louis	2.50
LIGHT BRASS	
Chicago	1.25 to 1.50
Cleveland	1.00 to 1.25
St. Louis	1.50
LEAD	
New York	2.00 to 2.25
St. Louis	2.00
ZINC	
New York	1.12½ to 1.25
Cleveland	1.00 to 1.12½
St. Louis	1.25
ALUMINUM	
Clippings, new, soft, Cleve.	9.00 to 10.00
Clippings, hard, Cleveland	7.50 to 8.50
Borings, Cleveland	3.00 to 3.50
Mixed cast, Cleveland	4.00 to 4.50
Mixed cast, St. Louis	3.00 to 3.25

Secondary Metals

Remelt aluminum No. 12	8.00 to 9.00
Brass ingot, 85-5-5-5	5.75

Metals

Trading Activity Restricted Because of Uncertainty Over Election—Prices Are Steady

New York—Trading in the metals generally was affected by uncertainty over the national election Tuesday. Moderate sales of lead were reported in addition to a slightly better demand for copper. Other metals were inactive. Prices showed little change through the week.

Copper—Electrolytic metal for delivery during the remainder of the year was available at 5.25c, Connecticut, from custom smelters. Premiums of one-eighth and ¼-cent, respectively, were asked for shipment in the first and second quarters next year. Mine producers held to the entirely nominal quotation of 6.25c, Connecticut. The market displayed little activity but custom smelters booked somewhat more business for delivery this year and in first quarter of 1933. Copper and brass products and secondary ingot held unchanged. Scrap was quiet. Interest in the trade is centered on the forthcoming meeting of world copper producers in New York this month. Present curtailment agreements terminate Dec. 31.

Lead—Tone of the market was fairly steady with most sellers asking 2.90c, East St. Louis, and 3.00c, New York. Some business was reported done in the Midwest, however, at 2.87½c. A few sales were made for December shipment but the bulk was for use this month.

Zinc—Little test of the market was offered last week. Consumers displayed slight interest in the market but sellers did not appear anxious to make sales under the prevailing quotation of 3.00c, East St. Louis.

Antimony—A stronger market in China resulted in some stiffening in prices.

Tin—Price changes were only fractional but levels were somewhat uncertain on some days due to fluctuation in sterling exchange. Demand for tin was quiet but little pressure to make sales was apparent. World visible supplies of tin were reduced slightly in October. Production of tin and terne plate took about 1400 tons of tin last month against 1200 in September.

Distillates More Active

New York—Distillates are slightly more active, with the lacquer industry taking more toluol and xylol. A better outlet for benzol to the chemical industry is noted. Prices are unchanged and firm. While some naphthalene contracting has been done, the season has not really started. Sulphate of ammonia prices are steady, with buying light.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per Pound at Producers' Plants in 250-Pound Drums

Phenol	0.153 to 0.173

Per Pound at Producers' Plants

Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75

Per 100 Pounds Atlantic Seaboard

Sulphate of ammonia	$1.0525

Quicksilver Firmer

New York—Quicksilver prices are firmer at $40 to $50, a virgin flask of 76 pounds, the former applying to round lots and the latter to small orders. A shipment of 3500 flasks from Spain for consignment to one of the large electrical equipment manufacturing companies, is reported. This is said to be on a contract made over a year ago.

Nonferrous Metal Prices of the Week, Cents a Pound

	Copper			Straits Tin		Lead		Zinc	Aluminum	Antimony	Nickel
	Electro delivered	Lake delivered	Casting refinery	New York Spot	New York Futures	N. Y.	East St. L.	St. L.	98-99%	Spot	Ingot
Oct. 29	5.30	6.37½	5.05	23.45	23.55	3.00	2.90	3.00	22.90	5.50	35.00
Oct. 31	5.30	6.37½	5.05	23.35	23.45	3.00	2.90	3.00	22.90	5.65	35.00
Nov. 1	5.30	6.37½	5.05	23.35	23.50	3.00	2.90	3.00	22.90	5.65	35.00
Nov. 2	5.30	6.37½	5.05	23.37½	23.52½	3.00	2.90	3.00	22.90	5.70	35.00
Nov. 3	5.30	6.37½	5.05	23.30	23.45	3.00	2.90	3.00	22.90	5.87½	35.00
Nov. 4	5.30	6.37½	5.05	23.35	23.45	3.00	2.90	3.00	22.90	5.87½	35.00

ILLINOIS FLOOR PLATE

It's easy to walk on

Cleans easily from any direction

Makes every step sure-footed

Reduces skidding dangers

Drains rapidly

Illinois Floor Plate is furnished in the following dimensions:

THICKNESS—3/16″ to 3/4″, exclusive of raised figure.

WIDTHS—6″ to 84″.

LENGTHS—On widths from 6″ to 15″, 120″ maximum.
On widths from 16″ to 29″, 240″ maximum.
On widths 30″ or above, 480″ maximum.

WEIGHTS—8.8 to 31.7 pounds per square foot.

Illinois Steel Company
SUBSIDIARY OF UNITED STATES STEEL CORPORATION
208 So. La Salle St., Chicago, Illinois

Pacific Coast

Golden Gate and Oakland Bridges Center of Interest in Steel Awards — Latter to Use 200,000 Tons of Steel—Greatest Demand Comes from Public Projects, Needing R. F. C. Aid

San Francisco—(*By Air Mail*)—Interest this week centers around awards for the Golden Gate bridge, San Francisco, involving close to 28,000 tons of cable and over 10,000 tons of structural steel for approach spans. Plans for the San Francisco-Oakland bridge have been completed and bids will be called for around Nov. 15. Approximately 200,000 tons of steel are involved.

The structural shape and reinforcing steel bar markets were the most active and a number of projects were placed. Prices are unchanged. The largest award was of 1500 tons of shapes for the Kern river bridge in California, placed with McClintic-Marshall Corp.

Reinforcing steel bar awards aggregated over 1600 tons. Soule Steel Co. secured 235 tons for highway work in Los Angeles county, California. Unnamed interests took 465 tons for highway work in Santa Clara county, California and 255 tons for the Kern River bridge near Bakersfield, Calif. Bids open Nov. 9 for 162 tons for highway work in Ventura county, Calif.

Demand for plates is quiet. Unnamed interests booked 100 tons for a gas holder for Ukiah, Calif. Bids have been opened on 400 tons for the Mare Island, Calif., navy yard. About 600 tons are involved for helium tanks for the Sunnyvale, Calif., dirigible base. Prices are generally 2.00c, c.i.f.

Structural shape awards exceeded 2800 tons, bringing the total for the year to 149,577 tons, compared with 99,910 tons for the corresponding period in 1931. Moore Drydock Co. took 234 tons for the Hat creek and Pitt river bridges in California. Pacific Coast Steel Corp. secured 180 tons for transmission towers for government projects at San Rafael and Sunnyvale, Calif. Unnamed interests secured 795 tons for a bridge in Clark County, Nevada. Bids have been opened on 1100 tons for a bridge over the Tuolumne river, Calif. Plain shapes are firm at 2.10c c.i.f.

Seattle Situation Dull

Seattle—The iron and steel industry is marking time in the Pacific Northwest. Aside from federal and state public works no important jobs involving steel have developed.

Subcontracts pending involve 360 tons of renforcing and 400 tons of shapes and machinery in two Washington state projects. Kern & Kibbe, Portland, are low bidders at $274,550 for constructing a jetty at the mouth of the Umpqua river, Oregon. This contract involves 300 tons of rails and about 100 tons of spikes, bolts, wire and pile joints. Bids will be opened Nov. 15 by the navy department for construction of a 6-foot diameter tunnel, 300 feet long between the two drydocks at Puget Sound yard, steel liner plate being specified.

The jobbing trade is steady but below normal levels and fails to gather momentum. Demand is not increasing as retailers are not replenishing. Sheets are moving in fair volume, bars, shapes and small angles leading. Prices remain open in Portland territory but Seattle wholesale houses are holding firm.

Steel in Europe

Steel Gains Increase—Export Demand Adds Volume

London—(*By Cable*)—A further slight improvement is noted in steel and iron markets and Continental prices are no longer competitive in the British market. Some shipments of hematite pig iron have been made to Denmark and Italy. Russia has placed an order with British makers for 25,000 tons of plates. Exports to the Far East have increased materially.

The Continent reports greater activity in most export markets and prices are definitely hardening with a firmer tendency. German makers have booked 15,000 tons of plates for shipment to Russia. Some Belgian steelworks are resuming production after a period of idleness. The outlook in general is improving.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Nov. 3

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON		£ s d		£ s d L s d
Foundry, 2.50-3.00 Silicon	$ 9.65	2 18 6	$ 8.76 to $9.25	1 16 0 to 1 18 0
Basic bessemer	8.91	2 14 0*	6.81	1 8 0
Hematite, Phos. .03-.05	9.74	2 19 0	.....	.....
SEMIFINISHED STEEL				
Billets	$16.09	4 17 6	$10.22	2 2 0
Wire rods, No. 5 gage	24.75	7 10 0	21.90	4 10 0
FINISHED STEEL				
Standard rails	$25.58	7 15 0	$26.77	5 10 0
Merchant bars	.90c	6 2 6	.61c	2 15 0
Structural shapes	1.08c	7 7 6	.50c to .51c	2 5 0 to 2 6 0
Plates, †¼ in. or 5 mm.	1.29c	8 15 0	.69c to .72c	3 2 6 to 3 5 0
Sheets, black, 24 gage or 0.5 mm.	1.21c	8 5 0	1.27c	5 15 0
Sheets, gal., 24 gage, corr.	1.47c	10 0 0	1.51c	6 17 6
Bands and strips	1.14c	7 15 0	.72c to .74c	3 5 0 to 3 7 6
Plain wire, base	1.40c	9 10 0	1.18c	5 7 6
Galvanized wire, base	1.69c	11 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.62c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.64	0 16 0	$3.20	0 13 2

British ferromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

		£ s d	French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$ 9.65	2 18 6	$ 8.06	205(2)	$ 8.37	300	$16.41	69
Basic bessemer pig iron	8.91	2 14 0*	6.68	170(1)	7.53	270	17.95	75.50
Furnace coke	1.98	0 12 0	4.87	124	3.49	125	4.57	19.20
Billets	16.50	5 0 0	14.54	370	10.46	375	22.95	96.50
Standard rails	1.21c	8 5 0	1.25c	697	1.50c	1,150	1.37c	127
Merchant bars	.97c	6 12 6	.95c	530	.60c	460	1.19c	110
Structural shapes	1.29c	8 15 0	.99c	550	.57c	435	1.16c	107.50
Plates, †¼-in. or 5 mm.	1.32c	9 0 0	1.17c	650	.73c	560	1.37c	127
Sheets, black	1.21c	8 5 0§	1.44c	800‡	.85c	650‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	1.47c	10 0 0	2.83c	1,570	1.64c	12,60	4.00c	370
Plain wire	1.40c	9 10 0	2.03c	1,130	1.69c	1,300	1.92c	178
Bands and strips	1.40c	9 10 0	1.04c	580	.83c	640	1.37c	127

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basis price.
British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel.

STEEL, WROUGHT AND CAST IRON PIPE, AND TUBING

Welded Iron, Steel Pipe □

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to consumers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

In.	Steel Blk.	Steel Gal.	In.	Iron Blk.	Iron Gal.
¼ & ⅜	57	34	½	28	10½
½	62	49½	¾	33	16½
¾	65½	55	1—1¼	36	20½
1—3	67½	57	2	38	21

LAP WELD

2	61	50½	2	26	12½
2½ to 6	64½	54	2½—3½	33	18½
8	62	51	4—6	35	22
10	60	49	7—8	34	21½
12	59	48	9—12	31	16½

BUTT WELD

Extra strong, plain ends

⅛	48	33	¼ & ⅜	+7	+41
¼ & ⅜	53½	38½	½	28	12½
½	59	49½	¾	33	17½
¾	63½	54	1—2	39	23

LAP WELD

Extra strong, plain ends

2	59	49½	2	34	18½
2½ to 4	62½	53	2½—4	39	25
5 & 6	62	52½	4½—6	38	24
8	58	47	7 & 8	36	22
10	51½	40½	9—12	26	13½
12	50½	39½			

STEEL LINE PIPE

2 to 3 butt	66½	2½ to 6 lap	63½
2 lap	60	8 lap	61
10 lap	59	12 lap	58

Discounts on steel pipe are net and not subject to any point or preferential. On iron pipe, the discounts shown on the cards are net, and are not subject to any further discounts or preferentials.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½ 5, 6	46

Quantity discounts are: Under 10,000 pounds, 10 points and 5 per cent; 10,000 to 24,999 pounds, 6 points and 5 per cent; 25,000 pounds to carload, 2 points and 5 and 5 per cent; carload and over, base discount and 5 and 5 per cent. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing □ □

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe □ □

Class B Pipe—Per Net Ton

Six-inch and over, Bir.	$32.00 to 33.00
Four-inch, Birmingham	36.00 to 37.00
Four-inch, Chicago	43.40 to 44.40
Six to 24-inch, Chicago	40.40 to 41.40
Six-inch and over, N. Y.	32.00 to 34.50
Four-inch, New York	34.50 to 36.50
Stand. fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore*	2.35c
Boston	3.25c
Buffalo	2.95c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los. Ang.	3.30c
New York‡(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.60c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	2.35c
Boston	3.25c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.35c-3.00c
Boston	3.10c-3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los. Ang. cl.	2.10c
Los Ang., lcl	2.40c
New York	2.65c-3.10c
Phila.	2.26½c
Pittsburgh	2.60c
San Fran. cl.	2.50c
San Fran. lcl	2.80c
Seattle	3.00c
St Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore*	2.35c
Boston	3.35c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	3.30c
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

PLATES

Baltimore*	2.35c
Boston	3.35c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.30c
New York(d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE

Baltimore*	2.80c
Boston	3.60c
Buffalo	3.45c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.60c
N. Y.	3.00c
Portland	4.00c
Phila.*† (e)	2.90c
Pitts.**	3.00c
San Fran.	3.50c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	3.70c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.25c
Detroit	3.50c
Los Ang.	4.20c
New York	3.75c-4.00c
Phila.*†(e)	3.40c
Pitts.**	3.40c
Portland	4.50c
San Fran.	3.90c
Seattle	4.50c
St. Louis	3.80c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.05c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	3.75c
Detroit	3.75c
Houston	4.25c
Los. Ang.	4.50c
New York	4.00c-4.10c
Phila.*†(e)	3.75c
Pitts.**	3.90c
Portland	5.00c
San. Fran.	4.55c
Seattle	5.00c
St. Louis	4.35c
St. Paul	4.19c
Tulsa	5.10c

†BANDS

Baltimore	2.65c
Boston	3.75c
Buffalo	3.30c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	3.80c
New York(d)	3.30c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.85c
San Fran.	3.15c
Seattle	3.50c
St. Paul	3.20c
Tulsa	3.45c

†HOOPS

Baltimore	2.65c
Boston	4.90c
Buffalo	3.95c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.65c
Det. No. 14 & lighter	3.30c
New York	3.30c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	3.75c

†New extras apply.

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)*	3.48c
Boston	3.60c
Buffalo	3.00c
Chattanooga*	3.68c
Chicago	3.00c
Cincinnati	3.32c
Cleveland	2.95c
Detroit	3.15c
Los Ang. (a)	4.25c
New York	3.39c
Philadelphia*	3.35c
Pittsburgh	2.95c
Portland (a)	4.50c
San Fran. (d)(f)	5.55c
Seattle (a)	4.50c
St. Paul (a)	3.20c
St. Louis	3.36c
Tulsa	4.65c

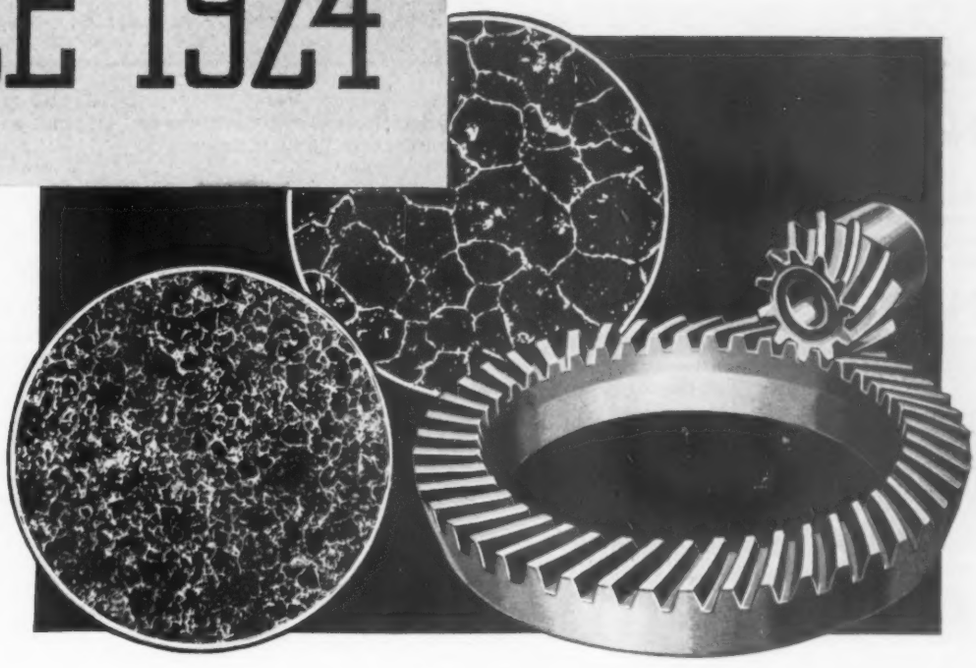
Flats and squares 50c extra, except Tulsa, where 5.14c is quoted

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.25c
Chicago (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(a) Rounds, hex, only.
(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
‡Domestic bars.
*Plus quan. extras.
**Less than 25 sheets.
*†50 or more bundles.

SINCE 1924



. . . . REPUBLIC

Has Been Meeting Grain Size Specifications

As in many other practices now standard in the metal working industry, Republic Metallurgists pioneered in the study of grain control and the effect of grain on the quality and performance of alloy steels.

For eight years Republic has been meeting grain specifications that have become more and more exacting with every development in the art. Republic has made thousands and thousands of tons of quality steels to the rigid grain size specifications of many of the industry's largest and most critical buyers of alloy steels.

Republic Metallurgists are always interested to discuss grain control. They have a world of data on the subject and the most complete metallurgical laboratories in America. They are ideally equipped to help you with your problems.

CENTRAL ALLOY DIVISION

REPUBLIC STEEL CORPORATION

MASSILLON OHIO

ACATHON STEELS

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

HARTFORD, CONN. — Glen-Wood-Maid Oil Burner Corp., 89 Main street, has been incorporated to manufacture oil burners and oil-burning equipment, by V. D. Zito, Hartford.

New York

BROOKLYN, N. Y.—Georgia Scrap Iron & Metal Co. has been incorporated with $10,000 capital to deal in and prepare scrap materials, by Katzman & Chassen, Ridgewood, N. Y.

BUFFALO, N. Y.—Machinery of the Buffalo lamp works of the General Electric Co. is being dismantled and shipped to the company's plant at Cleveland, and Youngstown, O., and Newark, N. J. Miniature bulbs were made in the Buffalo plant and foreign competition caused the change.

NEW YORK—McPhilben Mfg. Co. has been incorporated with $20,000 capital to manufacture lighting fixtures, by J. D. First, Jamaica, N. Y.

NEW YORK—Superior Equipment Co. has been incorporated with $500 capital to operate a machine shop, by C. S. Rosenberg, 1450 Broadway.

NEW YORK—Manhattan Radiator Mfg. Co. has been incorporated with 100 shares no par value to manufacture radiators, by Frost & Howell, 500 Fifth avenue.

NEW YORK—Standard Oil Co. of New Jersey, 26 Broadway, is making plans for the expenditure of $20,000,000 by June, 1933, for improvements and extensions to plant and other facilities in the United States.

New Jersey

MONTCLAIR, N. J.—Tenney Engineering Inc. has been incorporated with $2000 capital to carry on a business in boilers and engines, by Macfarlane & Monroe, New York.

PERTH AMBOY, N. J.—Franklin Stove Mfg. Co. has been incorporated with $25,000 capital to manufacture heating devices, by Smith & Schwartz, Perth Amboy, N. J.

TRENTON, N. J.—Public Utilities Products Corp. has been incorporated with 500 shares no par value to manufacture machinery, by Howard K. Shaw, Trenton, N. J.

Pennsylvania

BUTLER, PA.—Fretz-Moon Tube Co. has given a contract to Rust Engineering Co., Koppers building, Pittsburgh, for an addition to its plant here, estimated to cost $50,000, adding 25,000 square feet to its facilities.

CATAWISSA, PA.—Central Forging Co., manufacturer of pipe unions and nuts, has suffered loss of its plant by fire, including machinery. Loss estimated at $200,000.

PHILADELPHIA — Philadelphia Bronze & Brass Corp. has been incorporated with $25,150 capital to manufacture ingots and forgings, by Arthur Kitson Jr., 615 Spring road, Elkins Park, Pa.

Ohio

CINCINNATI — General Illumination Engineering Co. has been incorporated with 250 shares no par value by Lawrence P. Lake, 604 Vine street.

CINCINNATI—Cincinnati Union Terminal Co. has let a contract to Frank R. Messer & Son, Cincinnati, for a 1-story yard and shop service, repair and maintenance building, 42 x 492 feet, to cost $160,000.

Michigan

ALPENA, MICH.—Council is having plans made for a municipal electric light and power plant to cost $60,000 with equipment. Francis Engineering Co., Saginaw, Mich., is engineer.

DETROIT—McDonald Tool Co., 1537 Temple avenue, has been incorporated with $3000 capital to manufacture dies, jigs and fixtures, by George A. Rebh, 4134 Nottingham avenue.

Indiana

PERU, IND.—Board of public works is planning extensions to the municipal electric light and power plant and installation of a turbo-generator unit and accessories, to cost $85,000. Charles Brossman, Chamber of Commerce building, Indianapolis, is consulting engineer.

TERRE HAUTE, IND.—Pennsylvania

Here and There in Industry

COLSON CO., Elyria, O., operating in friendly receivership since May 13, was adjudged solvent in the federal court of the northern district of Ohio, Aug. 30, and the action in involuntary bankruptcy brought against the company has been dismissed at the expense of petitioners. Continuing in business, the Colson Co. reports increasing demand for its products and progress on new products in the preliminary stages of production. Among the new policies recently introduced is that of direct factory supervised sales, displacing the Colson-Stores Co., a separate corporation, which formerly acted as a sales outlet for the Colson line.

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Adams Grease Gun Corp. has moved to new and larger quarters at 54-62 West Twenty-first street, New York.

□ □ □

Development & Research Corp. has been formed by Ray E. Gest, 2449 North Fifth street, Milwaukee, to serve as clearing house between inventors and manufacturers for development and commercial exploitation of new products.

□ □ □

Midvale Co. and Midvale-Philadelphia Co., Philadelphia, have removed their San Francisco offices to Nineteenth and Alabama streets and their warehouse to 614 Alabama street, San Francisco.

□ □ □

Globe Steel Tubes Co., Milwaukee, has appointed W. J. Holliday & Co., Indianapolis, its distributors and sales agents for Indiana, south of Fort Wayne. Stock of boiler tubes will be carried and all products of the Globe company will be handled.

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Oster Mfg. Co. and Williams Tool Corp., Cleveland, have appointed the ParKett machinery division of the Austin-Hastings Co. Inc., Cambridge, Mass., distributor of their pipe-threading equipment in New England territory.

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Walter Bates Co., 333 North Michigan avenue, Chicago, sales organization handling sales of Bates Unitweld Grating manufactured by the Delta-Star Electric Co., Chicago, has taken out an Indiana charter, its original incorporation being in Illinois. No change has been made in its object, which is confined to sales only. Previous publication that a new type of grating was to be put on the market and that a plant would be built is in error.

railroad will reopen its car shops here in a short time, doing part of its program of car repair, according to H. E. Newcomer, vice president of western region. New York Central railroad has reopened its Beech Grove shops at Indianapolis on motive power rebuilding.

Illinois

DECATUR, ILL.—United States District Judge Charles B. Davis has authorized receivers for the Wabash railroad to build a locomotive washing plant at Decatur at a cost of $21,022.

ELMHURST, ILL.—Council is considering installation of a water-softening plant to cost $100,000 with equipment, in the municipal waterworks plant. Plans are by Consoer, Older & Quinlan, 205 West Wacker drive, Chicago, consulting engineer.

MT. CARMEL, ILL.—Construction of a waterworks system has been recommended to the city council at a cost of about $90,000. Caldwell Engineering Co., Jacksonville, Ill., is engineer.

ROCK ISLAND, ILL.—Gellman Mfg. Co. is building a new foundry adjacent to its plant at 1700 First street, one story, 50 x 122 feet. Included will be a milling room, core room, and one cupola, with provision for a second cupola.

VIRGINIA, ILL. — Application has been made by the city of Virginia for a loan of $138,000 from the Reconstruction Finance Corp. for construction of a waterworks system.

WILMETTE, ILL.—Bids will be received until Nov. 15 by N. P. Miller, village clerk, for a waterworks plant, pipe and filter plant at the foot of Lake avenue. Pearse, Greely & Hansen, 6 North Michigan avenue, are engineers.

Southern States

WASHINGTON—Bureau of supplies and accounts, navy department, will take bids until Nov. 15, as follows: Schedule 9010, one hydraulic copper pipe bender for Brooklyn, N. J.; schedule 9034, one motor-driven cutoff machine for Philadelphia; schedule 9035, one motor-driven engine lathe for Norfolk, Va.; schedule 9036, one motor-driven precision toolmakers lathe; schedule 9018, one pneumatic flanging machine for Brooklyn, N. Y.; Nov. 22, schedule 9044, two motor-driven band saws, for San Diego, Calif.

JACKSON, MISS. — State highway commision, G. G. Draper, state highway engineer, is taking bids for six crawler cranes, 14 road machines, 24 ton and a half trucks and eight 3-ton trucks.

HUNTINGTON, W. VA. — United States engineers are considering bids on 14 steam heating boilers to be installed in the powerhouses of locks No. 14 and 28, on the Ohio river.

Missouri

KANSAS CITY, MO.—Burns Brass & Chandelier Works, 1417 Agnes street, has taken over a building at Perry and Bellefontaine avenues and will remodel for its own occupancy to replace its burned plant.

ST. LOUIS—A. B. C. Oil Burner Corp. has been incorporated to manufacture oil burners and oil-burning equipment, by Julius Schwander, 3931 Olive street.

ST. LOUIS—City is planning to ask the Reconstruction Finance Corp. for a loan of $1,600,000 for a western railroad approach to the municipal bridge across the Mississippi river, to be repaid from railroad tolls from lines using it.

Arkansas

BEARDEN, ARK.—Council plans installation of pumping machinery and auxiliaries in the proposed municipal waterworks and sewage system, entire project to cost $300,000. F. J. Bachelor is mayor.

Oklahoma

OKLAHOMA CITY, OKLA. — Donleon Oil Co., care W. A. Paul, 2701

GRAVER

Special Fabrication

THE GRAVER organization has unexcelled facilities for manufacturing and fabricating tanks and steel plate up to 2 in. thick, nickel clad steel, stainless steel, aluminum and other special alloys. Our engineering department will cooperate with you in any degree desired, designing equipment completely to your needs or building it exactly to your specifications and specializing in welded construction. GRAVER'S production costs are low. Our field erection is recognized for its good workmanship. Our experience and responsibility are long standing.

As a service organization to industry, where can GRAVER help you?

Vulcalock Rubber Lined Tanks

Through contract with the B. F. Goodrich Rubber Company, we manufacture under their patent, tanks and steel plate with vulcanized gum rubber lining.

GRAVER TANK & MFG. CORP.

East Chicago, Indiana

Manufacturers and Erectors—Special Steel Plate Construction—Water Conditioning Equipment

Nearly 75 Years in Steel Plate Fabrication

N. W. Twenty-first street, has been organized with $300,000 capital and plans to build an oil refinery here, including a power unit, pumping machinery, tank and other equipment, total cost about $100,000.

Texas

CORPUS CHRISTI, TEX.—Nueces county water improvement district No. 1 has voted approval of a $40,000 bond issue for construction of a waterworks plant and purchase of equipment.

Wisconsin

MILWAUKEE — Fuller-Warren Co., 2506 North Thirty-second street, manufacturer of stoves and ranges, is improving its plant, installing conveyors and an enamel mill.

MILWAUKEE—Allis-Chalmers Mfg. Co. has made an appropriation of $20,000 for immediate plant improvement as part of the national rehabilitation program.

MILWAUKEE — LeRoi Co., West Allis, Wis., has booked an order from the government forest service for 32 large air compressors for mounting on trucks owned by the government, for use in trail building.

MILWAUKEE—Solar Corp., manufacturer of storage batteries and paints, with plants at Beaver Dam, Wis., and St. Paul, Minn., will move to Milwaukee about Dec. 1, consolidating production in the former Hamilton Metalplane Co. plant on West Pierce street.

MILWAUKEE—Automatic Products Co., 121 North Broadway, manufacturer of complete assemblies of electrical and mechanical devices, has increased floor space from 7000 to 10,000 square feet and installed additional screw machines, stamping, lathe and milling machines. R. W. Johnson is president.

RHINELANDER, WIS.—City council plans to build an electric light and power plant and a survey has been ordered, by Burns & McDonnell Engineering Co., Interstate building, Kansas City, Mo., engineer.

WAUSAU, WIS.—Minnesota Mining & Mfg. Co., St. Paul, Minn., has started a program of improvements, including an addition to its headquarters building and new equipment in its quarries and quartz mills at Wausau. Cost is estimated at $100,000. Harvey Nelson is superintendent of the Wausau division.

Minnesota

HUTCHINSON, MINN. — Council is considering plans for a municipal electric light and power plant to cost $270,000 with equipment. Plans are by E. G. Briggs, Bremer arcade, St. Paul, Minn., engineer.

ST. PAUL, MINN.—Minnesota Mining & Mfg. Co., 791 Forest street, plans electric power equipment in its proposed 2-story addition to its abrasive paper manufacturing plant, costing $40,000 with equipment. Toltz, Day & King Inc., Builders Exchange building, is architect.

South Dakota

MADISON, S. DAK.—City council, George H. Simpson Jr., clerk, plans an addition to the municipal electric light and power plant to cost $105,000. A loan from the Reconstruction Finance Corp. has been approved to cover the cost.

Iowa

CORNING, IOWA—A special election will be held soon on proposal to issue bonds for a municipal electric light and power plant and equipment, to cost $160,000. Vincent J. Mack is city clerk.

FORT MADISON, IOWA—Illinois-Iowa Bridge Co. and Robert W. Curtis, 18 North Fifth street, Keokuk, Iowa, plan a power dam and power station with three 1500-kilovolt-ampere generators and auxiliaries and a transmission line, to cost $500,000.

Colorado

FT. COLLINS, COLO.—Bond issue of $745,000 has been approved at special election, for construction of a municipal electric light and power plant. Plans are by Burgess C. Coy, Ft. Collins, engineer. (Noted Oct. 17).

Montana

GREAT FALLS, MONT.—Plans for a steel bridge with concrete abutments to span the Sun river have been completed for the state highway department, to cost $30,000, and bids will be opened shortly.

Pacific Coast

LOS ANGELES—Consolidated Steel Corp., 5701 East Slauson avenue, has been awarded a contract by Pasadena council for gate and other equipment for the Pine Canyon dam, at $39,498.

OAKLAND, CALIF. — Standard Brands Inc., 245 Eleventh street, San Francisco, will install electric power equipment in its proposed yeast manufacturing plant at San Leandro boulevard and Jones avenue, the entire cost of the plant to be $500,000.

SAN FRANCISCO—Bender Mfg. Co., 952 Folsom street, has been organized to manufacture and distribute several devices of E. A. Bender. Products will be a fire alarm system and electrical metal finder.

SAN JOSE, CALIF.—Southern Pacific railroad has notified city it will resume work immediately on its $4,000,000 rerouting project through San Jose.

SUNNYVALE, CALIF. — Dinwiddie Construction Co., 1101 Crocker building, San Francisco, has submitted low bid to United States bureau of yards and docks for construction at the naval air station, including railroad tracks, metal-clad partitions, plumbing, heating, air conditioning, helium and gasoline systems.

TORRANCE, CALIF.—General Petroleum Corp., Higgins building, Los Angeles, is preparing plans for a distillation and chemical purification plant on a 1000-acre site, to cost $1,500,000. Plant consists mostly of tanks and piping. Fred Isaacs, 2525 East Thirty-seventh street, manager of refining department, is in charge.

BREMERTON, WASH.—Bureau of yards and docks, navy department, is having plans made for an additional crane and tracks, to cost $105,000; power plant improvements, $100,000; improvements to distribution system, $75,000.

CHEHALIS, WASH.—City officials will apply for a Reconstruction Finance Corp. loan of $50,000 to extend the local water system involving nine miles of 4 and 6-inch cast iron watermains.

SEATTLE—Fisher Flouring Mills Co. plans expenditure of $100,000 to modernize its plant here with new machinery, some of which will be manufactured in the company's own shops.

WALLA WALLA, WASH.—Northwest Natural Gas Co., R. B. Newbern president, is extending its pipe lines 18 miles to Granger, Zillah and Toppenish, from the former terminus at Sunnyside, at a cost of $150,000.

WENATCHEE, WASH.—Squaw Saddle Mining & Milling Co. is building a new structure to house its power plant and machine shop, with new machinery and equipment for the manufacture of face brick. An extension to the main plant is also being erected.

Dominion of Canada

CALGARY, ALTA.—Royalite Oil Co. Ltd., Calgary, Alta., J. H. McLeod president, will build an absorption plant at Turner Valley to reclaim naphtha from gas now being burned. Boiler house unit will be built at once. Total eventual investment estimated at $500,000.

EDMONTON, ALTA.—D. K. Knott, mayor, has negotiated the location of an oil refinery here, the first unit, a refining still, costing $40,000, to be built at once and the ultimate investment estimated at $400,000.

THOROLD, ONT.—Contract by the hydroelectric power commission of Ontario to furnish surplus power to the Ontario Paper Co. Ltd. at Thorold will require expenditure of $325,000 for additional equipment.

TORONTO, ONT.—National Carburizing Co. Ltd. has been incorporated with $100,000 capital to manufacture tools and heat treat steel, by Walter R. Purves, Toronto.

TORONTO, ONT.—Dominion Steel & Coal Co., Sydney, N. S., has been given a contract for 150,000 tons of steel rails by the federal government, designed to give winter employment to a large number of men. Algoma Steel Corp., Sault Ste. Marie, Ont., expects a rail order for western divisions of the Canadian National Railways.